



L STAR TABLES

0001 32,3755
0002 REF 1 14,2000
0003 14,3405

BANK 32
SETLOC STARTAB
BANK

0004 REF 1

COUNT 14/STARS

0500 14,3405 15281 0
0500 14,3406 27231 1
0501 14,3407 74126 1
0501 14,3410 61181 0
0502 14,3411 70032 1
0502 14,3412 54470 0
0503 14,3413 15013 1
0503 14,3414 10432 0
0504 14,3415 87088 0
0504 14,3416 40370 1
0505 14,3417 02550 0
0505 14,3420 31133 1
0506 14,3421 07207 0
0506 14,3422 24243 1
0507 14,3423 67275 0
0507 14,3424 67544 0
0508 14,3425 13281 0
0508 14,3426 25121 1
0509 14,3427 05075 0
0509 14,3430 18350 0
0510 14,3431 70715 0
0510 14,3432 55404 1
0511 14,3433 62466 1
0511 14,3434 54577 0
0512 14,3435 10650 0
0512 14,3436 17202 1
0513 14,3437 63234 1
0513 14,3440 43704 0
0514 14,3441 73710 0
0514 14,3442 50170 1
0515 14,3443 07203 1
0515 14,3444 13612 0
0516 14,3445 81748 0
0516 14,3448 77370 0
0517 14,3447 02343 1
0517 14,3450 05340 0
0518 14,3451 03235 0
0518 14,3452 14762 1
0519 14,3453 62030 0
0519 14,3454 51212 1
0520 14,3455 70715 0
0520 14,3456 64117 1
0521 14,3457 01744 1
0521 14,3480 11157 1

2DEC +.8341953207 B-1 STAR 37 X
2DEC -.2394362567 B-1 STAR 37 Y
2DEC -.4987780849 B-1 STAR 37 Z
2DEC +.8138753897 B-1 STAR 36 X
2DEC -.5559063490 B-1 STAR 36 Y
2DEC +.1690413589 B-1 STAR 36 Z
2DEC +.4540570017 B-1 STAR 35 X
2DEC -.5393383149 B-1 STAR 35 Y
2DEC +.7091871552 B-1 STAR 35 Z
2DEC +.3200014224 B-1 STAR 34 X
2DEC -.4436740480 B-1 STAR 34 Y
2DEC -.8371095879 B-1 STAR 34 Z
2DEC +.5518180037 B-1 STAR 33 X
2DEC -.7934422090 B-1 STAR 33 Y
2DEC -.2568045150 B-1 STAR 33 Z
2DEC +.4535361097 B-1 STAR 32 X
2DEC -.8780537171 B-1 STAR 32 Y
2DEC +.1527307006 B-1 STAR 32 Z
2DEC +.2067145272 B-1 STAR 31 X
2DEC -.8720349419 B-1 STAR 31 Y
2DEC -.4436486945 B-1 STAR 31 Z
2DEC +.1216171923 B-1 STAR 30 X

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0522	14,3481	63531 0	2DEC	-.7703014754 B-1	STAR 30	Y
0522	14,3462	66055 1				
0523	14,3463	12007 0	2DEC	+.6259751556 B-1	STAR 30	Z
0523	14,3484	37503 0				
0524	14,3465	76145 0	2DEC	-.1126265542 B-1	STAR 29	X
0524	14,3466	53477 0				
0525	14,3467	60372 1	2DEC	-.9694679589 B-1	STAR 29	Y
0525	14,3470	43824 0				
0526	14,3471	03370 0	2DEC	+.2176238347 B-1	STAR 29	Z
0526	14,3472	15121 1				
0527	14,3473	76123 0	2DEC	-.1147908312 B-1	STAR 28	X
0527	14,3474	64245 0				
0528	14,3475	72437 1	2DEC	-.3399437395 B-1	STAR 28	Y
0528	14,3476	45623 1				
0529	14,3477	61041 0	2DEC	-.9334138229 B-1	STAR 28	Z
0529	14,3500	57124 1				
0530	14,3501	72275 1	2DEC	-.3518772848 B-1	STAR 27	X
0530	14,3502	55385 1				
0531	14,3503	62841 0	2DEC	-.8239987185 B-1	STAR 27	Y
0531	14,3504	72150 0				
0532	14,3505	70712 1	2DEC	-.4440853383 B-1	STAR 27	Z
0532	14,3506	41542 1				
0533	14,3507	67383 0	2DEC	-.5326042377 B-1	STAR 26	X
0533	14,3510	50441 0				
0534	14,3511	64426 0	2DEC	-.7159446596 B-1	STAR 26	Y
0534	14,3512	77283 0				
0535	14,3513	07157 0	2DEC	+.4511589595 B-1	STAR 26	Z
0535	14,3514	34058 0				
0536	14,3515	63326 0	2DEC	-.7662552143 B-1	STAR 25	X
0536	14,3516	77723 1				
0537	14,3517	67518 1	2DEC	-.5218285404 B-1	STAR 25	Y
0537	14,3520	72566 1				
0538	14,3521	05231 1	2DEC	+.3312227199 B-1	STAR 25	Z
0538	14,3522	14031 0				
0539	14,3523	64753 1	2DEC	-.6699901699 B-1	STAR 24	X
0539	14,3524	63156 0				
0540	14,3525	71237 1	2DEC	-.4160817959 B-1	STAR 24	Y
0540	14,3526	42272 0				
0541	14,3527	68427 0	2DEC	-.5908847707 B-1	STAR 24	Z
0541	14,3530	64260 1				
0542	14,3531	66546 0	2DEC	-.5611943804 B-1	STAR 23	X
0542	14,3532	73302 1				
0543	14,3533	73261 0	2DEC	-.2907877154 B-1	STAR 23	Y
0543	14,3534	73575 1				
0544	14,3535	14122 0	2DEC	+.7800365758 B-1	STAR 23	Z
0544	14,3536	07016 1				
0545	14,3537	61247 1	2DEC	-.9171065276 B-1	STAR 22	X
0545	14,3540	42015 0				
0546	14,3541	72314 1	2DEC	-.3500098785 B-1	STAR 22	Y
0546	14,3542	67004 1				



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0547	14,3543	74744 0	2DEC	-.1908108439 B-1	STAR 22	Z
0547	14,3544	74104 1				
0548	14,3545	70605 0	2DEC	-.4524416631 B-1	STAR 21	X
0548	14,3546	63103 0				
0549	14,3547	77154 1	2DEC	-.0492700670 B-1	STAR 21	Y
0549	14,3550	54113 0				
0550	14,3551	61601 1	2DEC	-.8904319167 B-1	STAR 21	Z
0550	14,3552	62472 1				
0551	14,3553	60604 0	2DEC	-.9525633510 B-1	STAR 20	X
0551	14,3554	63166 0				
0552	14,3555	77033 1	2DEC	-.0591313500 B-1	STAR 20	Y
0552	14,3556	63044 1				
0553	14,3557	73162 0	2DEC	-.2985406935 B-1	STAR 20	Z
0553	14,3560	53261 1				
0554	14,3561	60431 1	2DEC	-.9656240240 B-1	STAR 19	X
0554	14,3562	63350 1				
0555	14,3563	00660 1	2DEC	+.0526067543 B-1	STAR 19	Y
0555	14,3564	22763 0				
0556	14,3565	04045 1	2DEC	+.2545224762 B-1	STAR 19	Z
0556	14,3566	01424 1				
0557	14,3567	62165 1	2DEC	-.6606970465 B-1	STAR 18	X
0557	14,3570	45335 0				
0556	14,3571	07327 0	2DEC	+.4638127405 B-1	STAR 18	Y
0558	14,3572	21564 0				
0559	14,3573	03267 1	2DEC	+.2099464122 B-1	STAR 18	Z
0559	14,3574	34557 1				
0560	14,3575	63472 0	2DEC	-.7741360248 B-1	STAR 17	X
0560	14,3576	50705 0				
0561	14,3577	11661 0	2DEC	+.6154234025 B-1	STAR 17	Y
0561	14,3600	21433 0				
0562	14,3601	75501 1	2DEC	-.1462142053 B-1	STAR 17	Z
0562	14,3602	72421 0				
0563	14,3603	70431 0	2DEC	-.4656165921 B-1	STAR 16	X
0563	14,3604	65316 0				
0564	14,3605	07510 1	2DEC	+.4775604724 B-1	STAR 16	Y
0564	14,3606	12666 1				
0565	14,3607	13727 1	2DEC	+.7450624681 B-1	STAR 16	Z
0565	14,3610	21520 0				
0566	14,3611	72161 1	2DEC	-.3611937602 B-1	STAR 15	X
0566	14,3612	43161 0				
0567	14,3613	11144 0	2DEC	+.5748077640 B-1	STAR 15	Y
0567	14,3614	32323 1				
0568	14,3615	64200 1	2DEC	-.7342581827 B-1	STAR 15	Z
0568	14,3616	76476 0				
0569	14,3617	71323 0	2DEC	-.4116502629 B-1	STAR 14	X
0569	14,3620	70264 0				
0570	14,3621	16403 1	2DEC	+.9066387314 B-1	STAR 14	Y
0570	14,3622	05717 0				
0571	14,3623	01365 0	2DEC	+.0924676785 B-1	STAR 14	Z
0571	14,3624	17662 0				



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0572	14,3625	75055 0	2DEC	-.1818957154	B-1	STAR 13	X
0572	14,3626	75101 0					
0573	14,3627	17030 1	2DEC	+.9405318128	B-1	STAR 13	Y
0573	14,3630	32813 1					
0574	14,3631	73321 0	2DEC	-.2869039173	B-1	STAR 13	Z
0574	14,3632	65667 0					
0575	14,3633	77010 0	2DEC	-.0614380769	B-1	STAR 12	X
0575	14,3634	66714 0					
0576	14,3635	11515 0	2DEC	+.6031700108	B-1	STAR 12	Y
0576	14,3636	05314 1					
0577	14,3637	63215 1	2DEC	-.7952430739	B-1	STAR 12	Z
0577	14,3640	53830 1					
0578	14,3641	02145 0	2DEC	+.1373948084	B-1	STAR 11	X
0578	14,3642	21163 0					
0579	14,3643	12715 1	2DEC	+.6813398852	B-1	STAR 11	Y
0579	14,3644	21123 1					
0580	14,3645	13401 0	2DEC	+.7189588241	B-1	STAR 11	Z
0580	14,3646	26125 0					
0581	14,3647	03181 1	2DEC	+.2013428456	B-1	STAR 10	X
0581	14,3650	14810 0					
0582	14,3651	17401 1	2DEC	+.9689888101	B-1	STAR 10	Y
0582	14,3652	38465 0					
0583	14,3653	75552 1	2DEC	-.1432544058	B-1	STAR 10	Z
0583	14,3654	56556 1					
0584	14,3655	05473 1	2DEC	+.3509587451	B-1	STAR 9	X
0584	14,3656	01565 0					
0585	14,3657	16217 1	2DEC	+.8925545449	B-1	STAR 9	Y
0585	14,3660	31843 1					
0586	14,3661	04417 1	2DEC	+.2831507435	B-1	STAR 9	Z
0586	14,3662	22211 0					
0587	14,3663	08444 0	2DEC	+.4107492871	B-1	STAR 8	X
0587	14,3664	33354 0					
0588	14,3665	07785 1	2DEC	+.4987190610	B-1	STAR 8	Y
0588	14,3666	20153 1					
0589	14,3667	14154 1	2DEC	+.7632590132	B-1	STAR 8	Z
0589	14,3670	23613 1					
0590	14,3671	13202 0	2DEC	+.7033883645	B-1	STAR 7	X
0590	14,3672	05024 1					
0591	14,3673	13243 0	2DEC	+.7074274193	B-1	STAR 7	Y
0591	14,3674	07865 0					
0592	14,3675	01067 1	2DEC	+.0892188921	B-1	STAR 7	Z
0592	14,3676	01242 1					
0593	14,3677	10581 1	2DEC	+.5450682811	B-1	STAR 6	X
0593	14,3700	05866 1					
0594	14,3701	10401 0	2DEC	+.5313738486	B-1	STAR 6	Y
0594	14,3702	00357 0					
0595	14,3703	65477 0	2DEC	-.6484940879	B-1	STAR 6	Z
0595	14,3704	61124 1					
0596	14,3705	00154 1	2DEC	+.0131955837	B-1	STAR 5	X
0596	14,3706	03111 0					



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0597	14,3707	00077 1	2DEC	+.0078043793 B-1	STAR 5	Y
0597	14,3710	35676 0				
0598	14,3711	17777 0	2DEC	+.9998824772 B-1	STAR 5	Z
0598	14,3712	01142 1				
0599	14,3713	07874 0	2DEC	+.4917355818 B-1	STAR 4	X
0599	14,3714	11416 1				
0600	14,3715	03415 1	2DEC	+.2203784481 B-1	STAR 4	Y
0600	14,3716	12707 1				
0601	14,3717	62413 0	2DEC	-.8423950835 B-1	STAR 4	Z
0601	14,3720	43135 1				
0602	14,3721	07511 0	2DEC	+.4778748280 B-1	STAR 3	X
0602	14,3722	03423 1				
0603	14,3723	01872 0	2DEC	+.1164935557 B-1	STAR 3	Y
0603	14,3724	12054 0				
0604	14,3725	15735 1	2DEC	+.8707790771 B-1	STAR 3	Z
0604	14,3728	15405 1				
0605	14,3727	18745 0	2DEC	+.9342726691 B-1	STAR 2	X
0605	14,3730	21783 0				
0606	14,3731	02813 1	2DEC	+.1732973829 B-1	STAR 2	Y
0606	14,3732	24675 0				
0607	14,3733	73007 1	2DEC	-.3118128958 B-1	STAR 2	Z
0607	14,3734	50430 0				
0608	14,3735	15777 1	2DEC	+.8749183324 B-1	STAR 1	X
0608	14,3736	12457 1				
0609	14,3737	00324 1	2DEC	+.0258918990 B-1	STAR 1	Y
0609	14,3740	03285 0				
0610	14,3741	07571 0	2DEC	+.4835778442 B-1	STAR 1	Z
0610	14,3742	17020 0				
0611	14,3743	15325 1	CATLOG DEC	8889		

L AGC BLOCK TWO SELF-CHECK

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R0001 PROGRAM DESCRIPTION
R0003 PROGRAM NAME - SELF-CHECK
R0005 MOD NO - 1
R0007 MOD BY - GAUNT
R0008 FUNCTIONAL DESCRIPTION

DATE 20 DECEMBER 1967
LOG SECTION AGC BLOCK TWO SELF-CHECK
ASSEMBLY SUBROUTINE UTILITM REV 25

R0009 PROGRAM HAS TWO MAIN PARTS. THE FIRST IS SELF-CHECK WHICH RUNS AS A ZERO PRIORITY JOB WITH NO CORE SET, AS
R0011 PART OF THE BACK-UP IDLE LOOP. THE SECOND IS SHOW-BANKSUM WHICH RUNS AS A REGULAR EXECUTIVE JOB WITH ITS OWN
R0013 STARTING VERS.
R0014 THE PURPOSE OF SELF-CHECK IS TO CHECK OUT VARIOUS PARTS OF THE COMPUTER AS OUTLINED BELOW IN THE OPTIONS.
R0016 THE PURPOSE OF SHOW-BANKSUM IS TO DISPLAY THE SUM OF EACH BANK, ONE AT A TIME.
R0020 IN ALL THERE ARE 7 POSSIBLE OPTIONS IN THIS BLOCK II VERSION OF SELF-CHECK. MORE DETAIL DESCRIPTION MAY BE
R0022 FOUND IN E-2065 BLOCK II AGC SELF-CHECK AND SHOW BANKSUM BY EDWIN D. SMALLY DECEMBER 1966, AND ADDENDA 2 AND 3.
R0024 THE DIFFERENT OPTIONS ARE CONTROLLED BY PUTTING DIFFERENT NUMBERS IN THE SMODE REGISTER (NOUN 27). BELOW IS
R0026 A DESCRIPTION OF WHAT PARTS OF THE COMPUTER THAT ARE CHECKED BY THE OPTIONS, AND THE CORRESPONDING NUMBER, IN
R0028 OCTAL, TO LOAD INTO SMODE.
R0032 +-4 ERASABLE MEMORY
R0033 +-5 FIXED MEMORY
R0034 +-1,2,3,6,7,10 EVERYTHING IN OPTIONS 4 AND 5.
R0036 -0 SAME AS +-10 UNTIL AN ERROR IS DETECTED.
R0037 +0 NO CHECK, PUTS COMPUTER INTO THE BACKUP IDLE LOOP.
R0038 WARNINGS

R0039 USE OF E MEMORY RESERVED FOR SELF-CHECK (EVEN IN IDLE LOOP) AS TEMP STORAGE BY OTHER PROGRAMS IS DANGEROUS.
R0041 SMODE SET GREATER THAN OCT 10 PUTS COMPUTER INTO BACKUP IDLE LOOP.
R0042 CALLING SEQUENCE

R0043 TO CALL SELF-CHECK KEY IN
R0044 V 21 N 27 E OPTION NUMBER E
R0047 TO CALL SHOW-BANKSUM KEY IN
R0048 V 91 E DISPLAYS FIRST BANK
R0049 V 33 E PROCEED, DISPLAYS NEXT BANK
R0050 EXIT MODES, NORMAL AND ALARM

R0051 SELF-CHECK NORMALLY CONTINUES INDEFINITELY UNLESS THERE IS AN ERROR DETECTED. IF SO + OPTION NUMBERS PUT
R0053 COMPUTER INTO BACKUP IDLE LOOP, - OPTION NUMBERS RESTART THE OPTION.
R0054 THE -0 OPTION PROCEEDS FROM THE LINE FOLLOWING THE LINE WHERE THE ERROR WAS DETECTED.
R0057 SHOW-BANKSUM PROCEEDS UNTIL A TERMINATE IS KEYED IN (V 34 E). THE COMPUTER IS PUT INTO THE BACKUP IDLE LOOP
R0059
R0060 OUTPUT

L AGC BLOCK TWO SELF-CHECK

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R0061 SELF-CHECK UPON DETECTING AN ERROR LOADS THE SELF-CHECK ALARM CONSTANT (01102) INTO THE FAILREG SET AND
 R0063 TURNS ON THE ALARM LIGHT. THE OPERATOR MAY THEN DISPLAY THE THREE FAILREGS BY KEYING IN V 05 N 09 E. FOR FURTHER
 R0065 INFORMATION HE MAY KEY IN V 05 N 08 E, THE DSKY DISPLAY IN R1 WILL BE ADDRESS+1 OF WHERE THE ERROR WAS DETECTED,
 R0067 IN R2 THE BBON OF SELF-CHECK, AND IN R3 THE TOTAL NUMBER OF ERRORS DETECTED BY SELF-CHECK SINCE THE LAST MAN
 R0069 INITIATED FRESH START (SLAP1).
 R0073 SHOW-BANKSUM STARTING WITH BANK 0 DISPLAYS IN R1 THE BANK SUM (A +-NUMBER EQUAL TO THE BANK NUMBER), IN R2
 R0075 THE BANK NUMBER, AND IN R3 THE BUGGER WORD.
 R0076 ERASABLE INITIALIZATION REQUIRED

R0077 ACCOMPLISHED BY FRESH START
 R0078 SMODE SET TO +0
 R0079 DEBRIS

R0080 ALL EXITS FROM THE CHECK OF ERASABLE (ERASCHK) RESTORE ORIGINAL CONTENTS TO REGISTERS UNDER CHECK.
 R0082 EXCEPTION IS A RESTART. RESTART THAT OCCURS DURING ERASCHK RESTORES ERASABLE, UNLESS THERE IS EVIDENCE TO DOUBT
 R0084 E MEMORY, IN WHICH CASE PROGRAM THEN DOES A FRESH START (DOFSTART).

R0085			25,3766	BANK 25
R0086	REP 1		43,2000	SETLOC SELFCHCK
R0087			43,3230	BANK
R0088	REP 1			COUNT 43/SELF
R0089	REP 76	LAST 1174	4712	SBIT1 EQUALS BIT1
R0090	REP 44	LAST 1174	4711	SBIT2 EQUALS BIT2
R0091	REP 33	LAST 1174	4710	SBIT3 EQUALS BIT3
R0092	REP 40	LAST 1174	4707	SBIT4 EQUALS BIT4
R0093	REP 39	LAST 1089	4708	SBIT5 EQUALS BIT5
R0094	REP 44	LAST 1131	4705	SBIT6 EQUALS BIT6
R0095	REP 53	LAST 1171	4704	SBIT7 EQUALS BIT7
R0096	REP 28	LAST 1196	4703	SBIT8 EQUALS BIT8
R0097	REP 32	LAST 1010	4702	SBIT9 EQUALS BIT9
R0098	REP 37	LAST 1174	4701	SBIT10 EQUALS BIT10
R0099	REP 35	LAST 1174	4700	SBIT11 EQUALS BIT11
R100	REP 31	LAST 1174	4677	SBIT12 EQUALS BIT12
R101	REP 44	LAST 1174	4676	SBIT13 EQUALS BIT13
R102	REP 75	LAST 1335	4675	SBIT14 EQUALS BIT14
R103	REP 49	LAST 1174	4674	SBIT15 EQUALS BIT15
R104	REP 252	LAST 1294	4714	S+ZERO EQUALS ZERO
R105	REP 77	LAST 1363	4712	S+1 EQUALS BIT1
R106	REP 45	LAST 1363	4711	S+2 EQUALS BIT2
R107	REP 45	LAST 1337	6214	S+3 EQUALS THREE
R108	REP 19	LAST 1335	4710	S+4 EQUALS FOUR
R109	REP 28	LAST 1109	4715	S+5 EQUALS FIVE

L AGC BLOCK TWO SELF-CHECK

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0110	REP	40	LAST 1338	6211		S+6	EQUALS SIX
0111	REP	18	LAST 1174	4716		S+7	EQUALS SEVEN
0112	REP	13	LAST 1164	4373		S&BITS	EQUALS L078
0113	REP	4	LAST 1062	4726		CONTRCON	= OCT50
0114				43,3230	00061 0	ERASCON1	OCTAL 00061
0115				43,3231	01373 1	ERASCON2	OCTAL 01373
0116	REP	8	LAST 1174	4744		ERASCON6	= OCT1408
0117				43,3232	01461 0	ERASCON3	OCTAL 01461
0118				43,3233	01773 0	ERASCON4	OCTAL 01773
0119	REP	19	LAST 1099	4747		S10BITS	EQUALS L0710
0120	REP	4	LAST 919	4755		SENK03	EQUALS PRI06
0121	REP	6	LAST 1174	4364		-MAXADRS	= H15
0122				43,3234	00060 1	SIXTY	OCTAL 00060
0123				43,3235	60017 1	SUPACON	OCTAL 60017
0124				43,3236	17777 0	S13BITS	OCTAL 17777
0125				43,3237	25252 0	CONC+S1	OCTAL 25252
0126				43,3240	52400 1	CONC+S2	OCTAL 52400
0127				43,3241	76777 1	ERASCON5	OCTAL 76777
0128	REP	2	LAST 199	5630		S-7	= OCT77770
0129	REP	3	LAST 1063	6061		S-4	EQUALS NEG4
0130	REP	3	LAST 569	7714		S-3	EQUALS NEG3
0131	REP	6	LAST 1178	7715		S-2	EQUALS NEG2
0132	REP	29	LAST 1174	7716		S-1	EQUALS NEGONE
0133	REP	15	LAST 1071	4713		S-ZERO	EQUALS NEG0
0134	REP	46	LAST 1205	E3,1400		ERANK=	LST1
0135	REP	3	LAST 257	43,3242	01371 0	ADRS1	ADRES SKEP1
0136	REP	4	LAST 1190	43,3243	03334 0	SELPADRS	ADRES SELPCHK
A0137							
A0138							
A0139							
0140	REP	6	LAST 162	43,3244	3 1360 0	PRRORS CA	ERESTORE
0141				43,3245	0 0006 1	EXTEND	
0142	REP	1		43,3246	1 3255 1	BZP	ERRORS
0143				43,3247	0 0006 1	EXTEND	
0144	REP	3	LAST 182	43,3250	3 1376 1	DCA	SKEP5
0145	REP	3	LAST 162	43,3251	51=377 0	INDEX	SKEP7
0146				43,3252	52 001 1	DXCH	0000
0147	REP	2	LAST 257	43,3253	3 4714 1	CA	S-ZERO
0148	REP	7	LAST 1364	43,3254	55=360 1	TS	ERESTORE
0149				43,3255	0 0004 0	ERRORS	INHINT
0150	REP	303	LAST 1287	43,3256	3 0002 0	CA	Q
0151	REP	3	LAST 362	43,3257	55=357 0	TS	SPAIL
0152	REP	3	LAST 266	43,3260	55=363 1	TS	ALMCADR
0153	REP	3	LAST 179	43,3261	25=365 0	INCR	ERCOUNT
0154	REP	1		43,3262	0 5541 1	TCALARM2	TC ALARM2
0155				43,3263	01102 0	OCT	01102
0156	REP	5	LAST 266	43,3264	11=362 0	CCS	S-MODE
0157	REP	3	LAST 1364	43,3265	3 4714 1	SIDLOOP	CA S-ZERO

00377
 USED IN CONTRCK
 USED IN ERASCK
 USED IN ERASCK
 USED IN ERASCK
 USED IN ERASCK
 USED IN ERASCK
 01777, USED IN ERASCK
 06000, USED IN ROPECK
 FOR ROPECK

USED IN ROPECK

USED IN CYCLSHPT
 USED IN CYCLSHPT

SELPCHK RETURN ADDRESS. SHOULD BE PUT
 IN SELPRET WHEN GOING FROM SELPCHK TO
 SHOWSUM AND PUT IN SKEP1 WHEN GOING
 FROM SHOWSUM TO SELF-CHECK.

IS IT NECESSARY TO RESTORE ERASABLE

NO

RESTORE THE TWO ERASABLE REGISTERS

SAVE Q FOR FAILURE LOCATION
 FOR DISPLAY WITH BRANK AND ERCOUNT
 KEEP TRACK OF NUMBER OF MALFUNCTIONS.

SELF-CHECK MALFUNCTION INDICATOR

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ADDRESS	OPERATION	DATA	STATUS	REMARKS
0158	REP 6	LAST 1384 43,3286 55=362 0	TS	SMODE
0159	REP 5	LAST 1384 43,3287 0 3334 0	TC	SELFCHK
0160	REP 4	LAST 1384 43,3270 0 1357 1	TC	SPAIL
GO TO IDLE LOOP				
CONTINUE WITH SELF-CHECK				
0161	REP 344	LAST 1338 43,3271 10 000 0	-1CHK	CCS A
0162	REP 1	43,3272 1 3244 1	TCF	PRRORS
0163	REP 2	LAST 1385 43,3273 1 3244 1	TCF	PRRORS
0164	REP 345	LAST 1385 43,3274 10 000 0	CCS A	
0165	REP 3	LAST 1385 43,3275 1 3244 1	TCF	PRRORS
0166	REP 304	LAST 1384 43,3276 0 0002 0	TC	0
0167		43,3277 0 0008 1	SMODECHK	EXTEND
0168	REP 4	LAST 1384 43,3300 23=371 0	QXCH	SKEEP1
0169	REP 1	43,3301 0 3330 1	TC	CHECKNJ
0170	REP 7	LAST 1385 43,3302 11=362 0	CCS	SMODE
0171	REP 1	43,3303 0 3310 0	TC	SOPTIONS
0172	REP 1	43,3304 0 3301 0	TC	SMODECHK +2
0173	REP 2	LAST 1365 43,3305 0 3310 0	TC	SOPTIONS
0174	REP 2	LAST 80 43,3308 25=368 0	INCR	SCOUNT
0175	REP 5	LAST 1385 43,3307 0 1371 0	TC	SKEEP1
CONTINUE WITH SELF-CHECK				
0176	REP 1	43,3310 6 5830 1	SOPTIONS AD	S-7
0177		43,3311 0 0008 1	EXTEND	
0178		43,3312 6 3314 1	BZMP	+2
0179	REP 1	43,3313 0 3265 0	BKOPTN	TC
0180	REP 3	LAST 1385 43,3314 25=368 0	INCR	SCOUNT
0181	REP 1	43,3315 8 4718 0	AD	S+7
FOR OPTIONS BELOW NINE.				
ILLEGAL OPTION. GO TO IDLE LOOP.				
FOR OPTIONS BELOW NINE.				
0182	REP 348	LAST 1385 43,3318 50 000 1	INDEX	A
0183	REP 1	43,3317 0 3320 0	TC	SOPTION1
0184	REP 6	LAST 1385 43,3320 0 1371 0	SOPTION1 TC	SKEEP1
0185	REP 7	LAST 1385 43,3321 0 1371 0	SOPTION2 TC	SKEEP1
0186	REP 8	LAST 1385 43,3322 0 1371 0	SOPTION3 TC	SKEEP1
0187	REP 1	43,3323 0 3335 1	SOPTION4 TC	ERASCHK
0188	REP 1	43,3324 0 3516 0	SOPTION5 TC	ROPECHK
0189	REP 9	LAST 1385 43,3325 0 1371 0	SOPTION6 TC	SKEEP1
0190	REP 10	LAST 1385 43,3328 0 1371 0	SOPTION7 TC	SKEEP1
0191	REP 11	LAST 1385 43,3327 0 1371 0	SOPTION10 TC	SKEEP1
CONTINUE WITH SELF-CHECK				
0192		43,3330 0 0006 1	CHECKNJ	EXTEND
0193	REP 7	LAST 1190 43,3331 23=381 1	QXCH	SELFRET
0194	REP 61	LAST 1230 43,3332 0 4574 0	TC	POSTJUMP
0195	REP 2	LAST 1185 43,3333 03231 1	CADR	ADVAN
0196	REP 2	LAST 1385 43,3334 0 3277 0	SELFCHK TC	SMODECHK
** CHARLEY, COME IN HERE				
R0197 SKEEP7 HOLDS LOWEST OF TWO ADDRESSES BEING CHECKED.				
R0198 SKEEP6 HOLDS B(X+1).				
R0199 SKEEPS HOLDS B(X).				
R0200 SKEEP4 HOLDS C(EBANK) DURING ERASLOOP AND CHECKNJ.				

L AGC BLOCK TWO SELF-CHECK

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R0201 SKEEP3 HOLDS LAST ADDRESS BEING CHECKED (HIGHEST ADDRESS).
R0202 SKEEP2 CONTROLS CHECKING OF NON-SWITCHABLE ERASABLE MEMORY WITH BANK NUMBERS IN EB.
R0204 ERASCHK TAKES APPROXIMATELY 7 SECONDS

0205 RFP 2 LAST 257 43,3335 3 4712 1 ERASCHK CA S+1
0206 RFP 3 LAST 257 43,3336 55=372 1 TS SKEEP2
0207 RFP 4 LAST 1364 43,3337 3 4714 1 0EBANK CA S+ZERO
0208 RFP 51 LAST 1164 43,3340 54 003 0 TS EBANK
0209 RFP 1 43,3341 3 3232 1 CA ERASCON3 01461
0210 RFP 4 LAST 1364 43,3342 55=377 1 TS SKEEP7 STARTING ADDRESS
0211 RFP 1 43,3343 3 4747 1 CA S10BITS 01777
0212 RFP 3 LAST 257 43,3344 55=373 0 TS SKEEP3 LAST ADDRESS CHECKED
0213 RFP 1 43,3345 0 3365 1 TC ERASLOOP

0214 RFP 1 43,3346 3 4744 1 E134567B CA ERASCON6 01400
0215 RFP 5 LAST 1366 43,3347 55=377 1 TS SKEEP7 STARTING ADDRESS
0216 RFP 2 LAST 1366 43,3350 3 4747 1 CA S10BITS 01777
0217 RFP 4 LAST 1366 43,3351 55=373 0 TS SKEEP3 LAST ADDRESS CHECKED
0218 RFP 2 LAST 1366 43,3352 0 3365 1 TC ERASLOOP

0219 RFP 2 LAST 1366 43,3353 3 4744 1 2EBANK CA ERASCON6 01400
0220 RFP 6 LAST 1366 43,3354 55=377 1 TS SKEEP7 STARTING ADDRESS
0221 RFP 1 43,3355 3 3233 0 CA ERASCON4 01773
0222 RFP 5 LAST 1366 43,3356 55=373 0 TS SKEEP3 LAST ADDRESS CHECKED
0223 RFP 3 LAST 1366 43,3357 0 3365 1 TC ERASLOOP

0224 RFP 4 LAST 1366 43,3360 55=372 1 NOEBANK TS SKEEP2 +0
0225 RFP 1 43,3361 3 3230 0 CA ERASCON1 00061
0226 RFP 7 LAST 1366 43,3362 55=377 1 TS SKEEP7 STARTING ADDRESS
0227 RFP 1 43,3363 3 3231 1 CA ERASCON2 01373
0228 RFP 6 LAST 1366 43,3364 55=373 0 TS SKEEP3 LAST ADDRESS CHECKED

0229 43,3365 0 0004 0 ERASLOOP INHINT
0230 RFP 52 LAST 1366 43,3366 3 0003 1 CA EBANK STORES C(EBANK)
0231 RFP 3 LAST 162 43,3367 55=374 1 TS SKEEP4
0232 43,3370 0 0006 1 EXTEND
0233 RFP 8 LAST 1366 43,3371 5 1377 0 NDX SKEEP7
0234 43,3372 3 0001 0 DCA 0000
0235 RFP 4 LAST 1364 43,3373 53=376 0 DXCH SKEEP5 STORES C(X) AND C(X+1) IN SKEEP6 AND 5.
0236 RFP 9 LAST 1366 43,3374 3 1377 0 CA SKEEP7 IF RESTART, RESTORE C(X) AND C(X+1)
0237 RFP 6 LAST 1364 43,3375 55=360 1 TS ERESTORE
0238 RFP 213 LAST 1294 43,3376 54 001 1 TS L
0239 RFP 214 LAST 1366 43,3377 24 001 0 INCR L
0240 RFP 347 LAST 1365 43,3400 50 000 1 NDX A
0241 43,3401 52 001 1 DXCH 0000 PUTS OWN ADDRESS IN X AND X +1
0242 RFP 10 LAST 1366 43,3402 51=377 0 NDX SKEEP7
0243 43,3403 4 0001 1 CS 0001 CS X+1
0244 RFP 11 LAST 1366 43,3404 51=377 0 NDX SKEEP7
0245 43,3405 6 0000 1 AD 0000 AD X
0246 RFP 1 43,3406 0 3271 0 TC -1CHK
0247 RFP 9 LAST 1366 43,3407 3 1360 0 CA ERESTORE HAS ERASABLE BEEN RESTORED

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L AGC BLOCK TWO SELF-CHECK

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0248			43,3410	0 0006 1	EXTEND		
0249	REP 1		43,3411	1 3435 1	BZF ELOOPFIN	YES, EXIT ERASLOOP.	
0250			43,3412	0 0006 1	EXTEND		
0251	REP 12	LAST 1366	43,3413	5 1377 0	NDX SKEEP7		
0252			43,3414	4 0001 1	DCS 0000	COMPLEMENT OF ADDRESS OF X AND X+1	
0253	REP 13	LAST 1367	43,3415	51=377 0	NDX SKEEP7		
0254			43,3416	52 001 1	DXCH 0000	PUT COMPLEMENT OF ADDRESS OF X AND X+1	
0255	REP 14	LAST 1367	43,3417	51=377 0	NDX SKEEP7		
0256			43,3420	4 0000 0	CS 0000	CS X	
0257	REP 15	LAST 1367	43,3421	51=377 0	NDX SKEEP7		
0258			43,3422	6 0001 0	AD 0001	AD X+1	
0259	REP 2	LAST 1366	43,3423	0 3271 0	TC -1CHK		
0260	REP 10	LAST 1366	43,3424	3 1360 0	CA RESTORE	HAS ERASABLE BEEN RESTORED	
0261			43,3425	0 0006 1	EXTEND		
0262	REP 2	LAST 1367	43,3426	1 3435 1	BZF ELOOPFIN	YES, EXIT ERASLOOP.	
0263			43,3427	0 0006 1	EXTEND		
0264	REP 5	LAST 1366	43,3430	3 1376 1	DCA SKEEP5		
0265	REP 16	LAST 1367	43,3431	51=377 0	NDX SKEEP7	PUT B(X) AND B(X+1) BACK INTO X AND X+1	
0266			43,3432	52 001 1	DXCH 0000		
0267	REP 5	LAST 1366	43,3433	3 4714 1	CA S-ZERO	IF RESTART, DO NOT RESTORE C(X), C(X+1)	
0268	REP 11	LAST 1367	43,3434	55=360 1	TS RESTORE		
0269			43,3435	0 0003 1	ELOOPFIN RELINT		
0270	REP 2	LAST 1365	43,3436	0 3330 1	TC CHECKNJ	CHECK FOR NEW JOB	
0271	REP 4	LAST 1366	43,3437	3 1374 0	CA SKEEP4	REPLACES B(EBANK)	
0272	REP 53	LAST 1366	43,3440	54 003 0	TS EBANK		
0273	REP 17	LAST 1367	43,3441	25=377 0	INCR SKEEP7		
0274	REP 18	LAST 1367	43,3442	4 1377 1	CS SKEEP7		
0275	REP 7	LAST 1366	43,3443	6 1373 1	AD SKEEP3		
0276			43,3444	0 0006 1	EXTEND		
0277			43,3445	1 3447 1	BZF +2		
0278	REP 4	LAST 1366	43,3446	0 3365 1	TC ERASLOOP	GO TO NEXT ADDRESS IN SAME BANK	
0279	REP 5	LAST 1366	43,3447	11=372 1	CCS SKEEP2		
0280	REP 1		43,3450	0 3360 1	TC NOEBANK		
0281	REP 8	LAST 1367	43,3451	25=372 0	INCR SKEEP2	PUT +1 IN SKEEP2.	
0282	REP 54	LAST 1367	43,3452	3 0003 1	CA EBANK		
0283	REP 1		43,3453	6 4702 0	AD SBIT9		
0284	REP 55	LAST 1367	43,3454	54 003 0	TS EBANK		
0285	REP 1		43,3455	6 3241 0	AD ERASCON5	76777, CHECK FOR BANK E2	
0286			43,3456	0 0006 1	EXTEND		
0287	REP 1		43,3457	1 3353 0	BZF 2EBANK		
0288	REP 56	LAST 1367	43,3460	10 003 0	CCS EBANK		
0289	REP 1		43,3461	0 3346 0	TC E134567B	GO TO EBANKS 1,3,4,5,6, AND 7	
0290	REP 3	LAST 1366	43,3462	3 4744 1	CA ERASCON6	END OF ERASCHK	
0291	REP 57	LAST 1367	43,3463	54 003 0	TS EBANK		
0292	R0292 CNTRCHK PERFORMS A CS OF ALL REGISTERS FROM OCT. 60 THROUGH OCT. 10.						
0293	R0293 INCLUDED ARE ALL COUNTERS, TS-1, CYCLE AND SHIFT, AND ALL RUPT REGISTERS						
0294	REP 1		43,3464	3 4726 0	CNTRCHK CA CNTRCON	00050	
0295	REP 7	LAST 1367	43,3465	55=372 1	CNTRLOOP TS SKEEP2		
0296	REP 1		43,3466	6 4707 0	AD SBIT4	+10 OCTAL.	
0297	REP 346	LAST 1366	43,3467	50 000 1	INDEX A		



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0298			43,3470	4 0000 0	CS	0000	
0299	REP	8	LAST 1367	43,3471	11=372 1	CCS	SKEEP2
0300	REP	1		43,3472	0 3465 0	TC	CNTRLOOP
R0301 CYLSHFT CHECKS THE CYCLE AND SHFT REGISTERS							
0302	REP	1		43,3473	3 3237 1	CYLSHFT CA	CONC+S1
0303	REP	42	LAST 1166	43,3474	54 020 1	TS	CYR
0304	REP	22	LAST 1156	43,3475	54 022 0	TS	CYL
0305	REP	29	LAST 1156	43,3476	54 021 0	TS	SR
0306	REP	11	LAST 1078	43,3477	54 023 1	TS	EDOP
0307	REP	43	LAST 1368	43,3500	6 0020 0	AD	CYR
0308	REP	23	LAST 1368	43,3501	6 0022 1	AD	CYL
0309	REP	30	LAST 1368	43,3502	6 0021 1	AD	SR
0310	REP	12	LAST 1368	43,3503	6 0023 0	AD	EDOP
0311	REP	1		43,3504	6 3240 1	AD	CONC+S2
0312	REP	3	LAST 1367	43,3505	0 3271 0	TC	-1CHK
0313	REP	44	LAST 1368	43,3506	6 0020 0	AD	CYR
0314	REP	24	LAST 1368	43,3507	6 0022 1	AD	CYL
0315	REP	31	LAST 1368	43,3510	6 0021 1	AD	SR
0316	REP	13	LAST 1368	43,3511	6 0023 0	AD	EDOP
0317	REP	3	LAST 1368	43,3512	6 4712 1	AD	S+1
0318	REP	4	LAST 1368	43,3513	0 3271 0	TC	-1CHK
0319	REP	4	LAST 1365	43,3514	25=367 1	INCR	SCOUNT +1
0320	REP	3	LAST 1365	43,3515	0 3277 0	TC	SMODECHK
R0321	SKEEP1 HOLDS SUM						
R0322	SKEEP2 HOLDS PRESENT CONTENTS OF ADDRESS IN ROPECHK AND SHOWSUM ROUTINES						
R0323	SKEEP2 HOLDS BANK NUMBER IN LOW ORDER BITS DURING SHOWSUM DISPLAY						
R0324	SKEEP3 HOLDS PRESENT ADDRESS (00000 TO 01777 IN COMMON FIXED BANKS).						
R0325	(04000 TO 07777 IN PFX BANKS)						
R0326	SKEEP3 HOLDS BUGGER WORD DURING SHOWSUM DISPLAY						
R0327	SKEEP4 HOLDS BANK NUMBER AND SUPER BANK NUMBER						
R0328	SKEEP5 COUNTS 2 SUCCESSIVE TC SELF WORDS						
R0329	SKEEP6 CONTROLS ROPECHK OR SHOWSUM OPTION						
R0330	SKEEP7 CONTROLS WHEN ROUTINE IS IN COMMON FIXED OR FIXED FIXED BANKS						
0331	REP	1		43,3516	3 4713 0	ROPECHK CA	S-ZERO
03311	REP	4	LAST 257	43,3517	55=376 0	TS	SKEEP6
03312	REP	6	LAST 1367	43,3520	3 4714 1	STSHOSUM CA	S+ZERO
0332	REP	5	LAST 1367	43,3521	55=374 1	TS	SKEEP4
0333	REP	4	LAST 1368	43,3522	3 4712 1	CA	S+1
0334	REP	19	LAST 1367	43,3523	55=377 1	COMMPX TS	SKEEP7
0335	REP	7	LAST 1368	43,3524	3 4714 1	CA	S+ZERO
0336	REP	12	LAST 1365	43,3525	55=371 1	TS	SKEEP1
0337	REP	8	LAST 1367	43,3526	55=373 0	TS	SKEEP3
0338	REP	5	LAST 1368	43,3527	3 4712 1	CA	S+1
0339	REP	6	LAST 1367	43,3530	55=375 0	TS	SKEEP5
0340	REP	6	LAST 1368	43,3531	3 1374 0	COMADRS CA	SKEEP4
0341	REP	215	LAST 1366	43,3532	54 001 1	TS	L

*
* -0 FOR ROPECHK.
* SHOULD BE ROPECHK
BANK NUMBER
COUNTS DOWN 2 TC SELF WORDS
TO SET SUPER BANK

L AGC BLOCK TWO SELF-CHECK

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0342	REP	7	LAST 1384	43,3533	7 4384 0	MASK	HIS
0343	REP	9	LAST 1388	43,3534	6 1373 1	AD	SKEEP3
0344	REP	2	LAST 352	43,3535	0 4610 1	TC	SUPDICAL
0345	REP	1		43,3536	0 3561 0	TC	ADSUM
0346	REP	1		43,3537	6 4700 1	AD	SBIT11
0347	REP	1		43,3540	0 3572 1	TC	ADRSCHK
0348	REP	349	LAST 1367	43,3541	4 0000 0	POPX	CS A
0349	REP	20	LAST 1368	43,3542	55=377 1	TS	SKEEP7
0350				43,3543	0 0006 1	EXTEND	
0351				43,3544	1 3547 0	BZF	+3
0352	REP	1		43,3545	3 4677 0	CA	SBIT12
0353				43,3546	0 3550 1	TC	+2
0354	REP	1		43,3547	3 4755 1	CA	SENK03
0355	REP	10	LAST 1369	43,3550	55=373 0	TS	SKEEP3
0356	REP	6	LAST 1368	43,3551	3 4714 1	CA	S+ZERO
0357	REP	13	LAST 1368	43,3552	55=371 1	TS	SKEEP1
0358	REP	6	LAST 1368	43,3553	3 4712 1	CA	S+1
0359	REP	7	LAST 1368	43,3554	55=375 0	TS	SKEEP5
0360	REP	11	LAST 1369	43,3555	51=373 1	INDEX	SKEEP3
0361				43,3556	3 0000 1	CA	0000
0362	REP	2	LAST 1369	43,3557	0 3561 0	TC	ADSUM
0363	REP	2	LAST 1369	43,3560	0 3572 1	TC	ADRSCHK
0364	REP	9	LAST 1368	43,3561	55=372 1	ADSUM	TS
0365	REP	14	LAST 1369	43,3562	6 1371 0	AD	SKEEP1
0366	REP	15	LAST 1369	43,3563	55=371 1	TS	SKEEP1
0367	REP	9	LAST 1369	43,3564	3 4714 1	CAP	S+ZERO
0368	REP	16	LAST 1369	43,3565	6 1371 0	AD	SKEEP1
0369	REP	17	LAST 1369	43,3566	55=371 1	TS	SKEEP1
0370	REP	10	LAST 1369	43,3567	4 1372 1	CS	SKEEP2
0371	REP	12	LAST 1369	43,3570	6 1373 1	AD	SKEEP3
0372	REP	305	LAST 1365	43,3571	0 0002 0	TC	0
0373	REP	350	LAST 1369	43,3572	22 000 1	ADRSCHK	LXCH A
0374	REP	13	LAST 1369	43,3573	3 1373 1	CA	SKEEP3
0375	REP	20	LAST 1384	43,3574	7 4747 0	MASK	LOW10
0376	REP	1		43,3575	6 4384 1	AD	-MAXADRS
0377				43,3576	0 0006 1	EXTEND	
0378	REP	1		43,3577	1 3666 0	BZF	SOPTION
0379	REP	6	LAST 1369	43,3600	11=375 0	CCS	SKEEP5
0380				43,3601	0 3604 0	TC	+3
0381				43,3602	0 3604 0	TC	+2
0382	REP	2	LAST 1369	43,3603	0 3666 1	TC	SOPTION
0383	REP	216	LAST 1368	43,3604	10 001 1	CCS	L
0384	REP	1		43,3605	0 3614 1	TC	CONTINU
0385	REP	2	LAST 1369	43,3606	0 3614 1	TC	CONTINU
0386	REP	3	LAST 1369	43,3607	0 3614 1	TC	CONTINU
0387	REP	9	LAST 1369	43,3610	11=375 0	CCS	SKEEP5
0388	REP	4	LAST 1369	43,3611	0 3615 0	TC	CONTINU +1

SUPER DATA CALL

02000

04000, STARTING ADDRESS OF BANK 02

06000, STARTING ADDRESS OF BANK 03

COUNTS DOWN 2 TO SELF WORDS

RELATIVE ADDRESS
SUBTRACT MAX RELATIVE ADDRESS = 1777.

CHECKSUM FINISHED IF LAST ADDRESS.
IS CHECKSUM FINISHED
NO
NO
GO TO ROPECHK SHOWSUM OPTION
-0 MEANS A TC SELF WORD.

L AGC BLOCK TWO SELF-CHECK

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0389	REP	1		43,3612	3 7716 0		CA	S-1		
0390	REP	5	LAST 1369	43,3613	0 3615 0		TC	CONTINU +1		AD IN THE BUGGER WORD
0391	REP	7	LAST 1369	43,3614	3 4712 1	CONTINU	CA	S+1		MAKE SURE TWO CONSECUTIVE TC SELF WORDS
0392	REP	10	LAST 1369	43,3615	55=375 0		TS	SKEEP5		*
03921	REP	5	LAST 1368	43,3616	11=376 0		CCS	SKEEP6		* +1, SHOWSUM
03922	REP	21	LAST 1190	43,3617	10 087 1		CCS	NEWJOB		*
03923	REP	4	LAST 828	43,3620	0 5057 0		TC	CHANG1		*
03924				43,3621	0 3623 0		TC	+2		
0393	REP	3	LAST 1367	43,3622	0 3330 1		TC	CHECKNJ		-0 IN SKEEP6 FOR ROPECHK
0394	REP	14	LAST 1369	43,3623	25=373 1	ADRS+1	INCR	SKEEP3		
0395	REP	21	LAST 1369	43,3624	11=377 1		CCS	SKEEP7		
0396	REP	1		43,3625	0 3531 0		TC	COMADRS		
0397	REP	2	LAST 1370	43,3626	0 3531 0		TC	COMADRS		
0398	REP	1		43,3627	0 3555 1		TC	PXADRS		
0399	REP	2	LAST 1370	43,3630	0 3555 1		TC	PXADRS		
0400	REP	7	LAST 1368	43,3631	4 1374 1	NXTBNK	CS	SKEEP4		
0401	REP	1		43,3632	6 3721 0		AD	LSTBNKCH		LAST BANK TO BE CHECKED
0402				43,3633	0 0008 1		EXTEND			
0403	REP	1		43,3634	1 3000 0		BZP	ENDSUMS		END OF SUMMING OF BANKS.
0404	REP	8	LAST 1370	43,3635	3 1374 0		CA	SKEEP4		
0405	REP	2	LAST 1369	43,3636	6 4700 1		AD	SBIT11		
0406	REP	9	LAST 1370	43,3637	55=374 1		TS	SKEEP4		37 TO 40 INCRMTS SKEEP4 BY END RND CARRY
0407	REP	1		43,3640	0 3644 1		TC	CHKSUPR		
0408	REP	1		43,3641	3 4674 0	17TO20	CA	SBIT15		
0409	REP	10	LAST 1370	43,3642	27=374 1		ADS	SKEEP4		SET FOR BANK 20
0410	REP	1		43,3643	0 3660 1		TC	GONXTBNK		
0411	REP	8	LAST 1369	43,3644	7 4364 0	CHKSUPR	MASK	H15		
0412				43,3645	0 0008 1		EXTEND			
0413	REP	1		43,3646	1 3656 0		BZP	NXTSUPR		INCREMENT SUPER BANK
0414	REP	1		43,3647	6 3236 0	27TO30	AD	S13BITS		
0415				43,3650	0 0008 1		EXTEND			
0416				43,3651	1 3653 0		BZP	+2		BANK SET FOR 30
0417	REP	2	LAST 1370	43,3652	0 3660 1		TC	GONXTBNK		
0418	REP	1		43,3653	3 3234 1		CA	SIXTY		FIRST SUPER BANK
0419	REP	11	LAST 1370	43,3654	27=374 1		ADS	SKEEP4		
0420	REP	3	LAST 1370	43,3655	0 3660 1		TC	GONXTBNK		
0421	REP	1		43,3656	6 3235 0	NXTSUPR	AD	SUPRCON		SET Bnk 30 + INCR SUPR Bnk AND CANCEL
0422	REP	12	LAST 1370	43,3657	27=374 1		ADS	SKEEP4		ERC BIT OF THE 37 TO 40 ADVANCE.
0423	REP	22	LAST 1370	43,3660	11=377 1	GONXTBNK	CCS	SKEEP7		
0424	REP	1		43,3661	0 3523 0		TC	COMMPX		
0425	REP	8	LAST 1370	43,3662	3 4712 1		CA	S+1		
0426	REP	1		43,3663	0 3541 1		TC	PXFX		HAS TO BE LARGER THAN NO OF FXSW BANKS.
0427	REP	1		43,3664	3 4704 0		CA	SBIT7		
0428	REP	2	LAST 1370	43,3665	0 3523 0		TC	COMMPX		
0429	REP	13	LAST 1370	43,3666	3 1374 0	SOPTION	CA	SKEEP4		
0430	REP	9	LAST 1370	43,3667	7 4364 0		MASK	H15		= BANK BITS
0431	REP	5	LAST 349	43,3670	0 4345 1		TC	LEFTS		



L AGC BLOCK TWO SELF-CHECK

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0432	REP	217	LAST 1369	43,3671	54 001 1	TS	L
0433	REP	14	LAST 1370	43,3672	3 1374 0	CA	SKEEP4
0434	REP	1		43,3673	7 4373 0	MASK	S8BITS
0435				43,3674	0 0006 1	EXTEND	
0436	REP	1		43,3675	1 3703 1	BZF	SOPT
0437	REP	32	LAST 1368	43,3676	54 021 0	TS	SR
0438	REP	218	LAST 1371	43,3677	3 0001 0	CA	L
0439	REP	19	LAST 1384	43,3700	7 4716 1	MASK	SEVEN
0440	REP	33	LAST 1371	43,3701	6 0021 1	AD	SR
0441	REP	219	LAST 1371	43,3702	54 001 1	TS	L
0442	REP	6	LAST 1370	43,3703	3 1376 1	CA	SKEEP6
0443				43,3704	0 0006 1	EXTEND	
0444				43,3705	1 3707 0	BZF	+2
0445	REP	1		43,3706	0 2762 0	TC	SDISPLAY
0446	REP	18	LAST 1369	43,3707	11-371 1	CCS	SKEEP1
04481				43,3710	0 3712 0	TC	+2
04482				43,3711	0 3713 1	TC	+2
04483	REP	9	LAST 1370	43,3712	6 4712 1	AD	S+1
04484	REP	19	LAST 1371	43,3713	55-371 1	TS	SKEEP1
0447	REP	220	LAST 1371	43,3714	4 0001 1	CS	L
0448	REP	20	LAST 1371	43,3715	6 1371 0	AD	SKEEP1
0449	REP	2	LAST 1370	43,3718	6 7716 0	AD	S-1
0450	REP	5	LAST 1368	43,3717	0 3271 0	TC	-1CHK
0451	REP	2	LAST 257	43,3720	0 3631 0	TC	NXTRNK
0454	REP	22	LAST 1370	0067		BRANK=	NEWJOB
0455				43,3721	66100 0	LSTRNKCH	RECON*

BANK NUMBER BEFORE SUPER BANK

= SUPER BANK BITS

BEFORE SUPER BANK
SUPER BANK NECESSARY

BANK NUMBER WITH SUPER BANK

*

*

* ON -0 CONTINUE WITH ROPE CHECK.

* ON +1 GO TO DISPLAY OF SUM.

FORCE SUM TO ABSOLUTE VALUE.

= - BANK NUMBER

CHECK SUM

* CONSTANT, LAST BANK.

L PHASE TABLE MAINTENANCE

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P0001 SUBROUTINE TO UPDATE THE PROGRAM NUMBER DISPLAY ON THE DSKY.

0002	REF	2	LAST	215	TO	216'	20	20*	COUNT	02/PHASE	
0003											
0004	REF	2	LAST	215					BLOCK	02	
0005									SETLOC	PFTAG1	
									BANK		
0006	REF	306	LAST	1369			5243	50 002 0	NEWMODEX	INDEX	0
0007							5244	3 0000 1	CAP	0	
0008	REF	307	LAST	1372			5245	24 002 0	INCR	0	
											UPDATE MODREG. ENTRY FOR MODE IN FIXED.
0009	REF	15	LAST	1306			5246	55-011 1	NEWMODEA	TS	MODREG
0014							5247	3 5252 1	MMDSP	CAP	+3
0015	REF	31	LAST	1287			5250	22 006 1	PREBUMP	LXCH	EBANK
0016	REF	6	LAST	1299			5251	1 4577 1	TCF	BANKJUMP	
0017	REF	1					5252	20344 0	CADR	SETUPDSP	
											ENTRY FOR MODE IN A. DISPLAY MAJOR MODE. PUTS EBANK IN L PUTS Q INTO A
P0018											
											RETURN TO CALLER +3 IF MODE = THAT AT CALLER +1. OTHERWISE RETURN TO CALLER +2.
0020	REF	308	LAST	1372			5253	50 002 0	CHECKSUM	INDEX	0
0021							5254	4 0000 0	CS	0	
0022	REF	16	LAST	1372			5255	6 1011 0	AD	MODREG	
0023							5256	0 0006 1	EXTEND		
0024	REF	2	LAST	1180			5257	1 6710 0	BZF	Q+2	
0025	REF	3	LAST	244			5260	1 6708 1	TCF	Q+1	
											NO MATCH
0026	REF	3	LAST	1372			6711		TCQ	=	Q+2 +1
0027											
0028	REF	1					14,3744		BANK	14	
0029							10,2000		SETLOC	PHASETAB	
							10,2344		BANK		
0030	REF	1							COUNT	10/PHASE	
0031											
0032	REF	25	LAST	762			10,2344	0 0004 0	SETUPDSP	INHINT	
0033	REF	14	LAST	1174			10,2345	52 071 0	DXCH	RUPTRREG1	
0034	REF	31	LAST	1195			10,2346	3 4371 0	CAP	PRI030	
0035	REF	17	LAST	1372			10,2347	0 5027 1	TC	NOVAC	
0036	REF	1					1011		EBANK=	MODREG	
0036	REF	1					10,2350	03435 0	2CADR	DSPMAJOR	
0037	REF	1					10,2351	60102 1			
0037	REF	26	LAST	1372			10,2352	52 071 0	DXCH	RUPTRREG1	
0038							10,2353	0 0003 1	RELINT		
0039	REF	16	LAST	783			10,2354	52 006 0	DXCH	Z	
											RETURN
0040	REF	2	LAST	369			40,3435		DSPMAJOR	EQUALS	DSPMAJOR
0041							5261		BLOCK	02	

SAVE CALLER-S RETURN 2CADR
EITHER A TASK OR JOB CAN COME TO
NEWMODEX



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L PHASE TABLE MAINTENANCE

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0042 REP 3 LAST 1372 4000
0043 5261

SETLOC PPTAG1
BANK



L PHASE TABLE MAINTENANCE

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R0044 PHASCHNG IS THE MAIN WAY OF MAKING PHASE CHANGES FOR RESTARTS. THERE ARE THREE FORMS OF PHASCHNG, KNOWN AS TYPE
R0046 A, TYPE B, AND TYPE C. THEY ARE ALL CALLED AS FOLLOWS, WHERE OCT XXXXX CONTAINS THE PHASE INFORMATION,

A0048 TC PHASCHNG
A0049 OCT XXXXX

R0050 TYPE A IS CONCERNED WITH FIXED PHASE CHANGES, THAT IS, PHASE INFORMATION THAT IS STORED PERMANENTLY. THESE
R0052 OPTIONS ARE, WHERE G STANDS FOR A GROUP AND .X FOR THE PHASE,

R0053 G.0 INACTIVE, WILL NOT PERMIT A GROUP G RESTART
R0055 G.1 WILL CAUSE THE LAST DISPLAY TO BE REACTIVATED, USED MAINLY IN MANNED FLIGHTS
R0057 G.EVEN A DOUBLE TABLE RESTART, CAN CAUSE ANY COMBINATION OF TWO JOBS, TASKS, AND/OR
R0059 LONGCALL TO BE RESTARTED.
R0060 G.ODD NOT .1 A SINGLE TABLE RESTART, CAN CAUSE EITHER A JOB, TASK, OR LONGCALL RESTART

R0062 THIS INFORMATION IS PUT INTO THE OCTAL WORD AFTER TC PHASCHNG AS FOLLOWS

R0063 TL0 00P PPP PPP GGG

R0065 WHERE EACH LETTER OR NUMBER STANDS FOR A BIT. THE G'S STAND FOR THE GROUP, OCTAL 1 - 7, THE P'S FOR THE PHASE,
R0067 OCTAL 0 - 127. 0'S MUST BE 0. IF ONE WISHES TO HAVE THE BASE OF GROUP G TO BE SET AT THIS TIME,
R0069 T IS SET TO 1, OTHERWISE IT IS SET TO 0. SIMILARLY IF ONE WISHES TO SET LONGBASE, THEN L IS SET TO 1, OTHERWISE
R0071 IT IS SET TO 0. SOME EXAMPLES,

A0072	TC	PHASCHNG	THIS WILL CAUSE GROUP 3 TO BE SET TO 0,
A0073	OCT	00003	MAKING GROUP 3 INACTIVE
A0074	TC	PHASCHNG	IF A RESTART OCCURS THIS WOULD CAUSE
A0075	OCT	00012	GROUP 2 TO RESTART THE LAST DISPLAY
A0076	TC	PHASCHNG	THIS SETS THE BASE OF GROUP 4 AND IN
A0077	OCT	40064	CASE OF A RESTART WOULD START UP THE TWO
A0078			THINGS LOCATED IN THE DOUBLE 4.8 RESTART
A0079			LOCATION
A0080	TC	PHASCHNG	THIS SETS LONGBASE AND UPON A RESTART
A0081	OCT	20135	CAUSES 5.13 TO BE RESTARTED (SINCE
A0082			LONGBASE WAS SET THIS SINGLE ENTRY
A0083			SHOULD BE A LONGCALL)
A0084	TC	PHASCHNG	SINCE BOTH BASE4 AND LONGBASE ARE SET,
A0085	OCT	60124	4.12 SHOULD CONTAIN BOTH A TASK AND A
A0086			LONGCALL TO BE RESTARTED

R0087 TYPE C PHASCHNG CONTAINS THE VARIABLE TYPE OF PHASCHNG INFORMATION. INSTEAD OF THE INFORMATION BEING IN A
R0089 PERMANENT FORM, ONE STORES THE DESIRED RESTART INFORMATION IN A VARIABLE LOCATION. THE BITS ARE AS FOLLOWS,

R0091 TL0 1AD XXX C W GGG

R0092 WHERE EACH LETTER OR NUMBER STANDS FOR A BIT. THE G'S STAND FOR THE GROUP, OCTAL 1 - 7. IF THE RESTART IS TO
R0094 BE BY WAITLIST, W IS SET TO 1, IF IT IS A JOB, J IS SET TO 1, IF IT IS A LONGCALL, C IS SET TO 1. ONLY ONE OF
R0098 THESE THREE BIT S MAY BE SET. X'S ARE IGNORED 1 MUST BE 1, AND 0 MUST BE 0. AGAIN T STANDS FOR THE BASE,

L PHASE TABLE MAINTENANCE

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R0098 AND L FOR LONGBASE. THE BITS A AND D ARE CONCERNED WITH THE VARIABLE INFORMATION. IF D IS SET TO 1, A PRIORITY
R0100 OR DELTA TIME WILL BE READ FROM THE NEXT LOCATION AFTER THE OCTAL INFORMATION, IF THIS IS TO BE INDIRECT, THAT
R0102 IS, THE NAME OF A LOCATION CONTAINING THE INFORMATION (DELTA TIME ONLY), THEN THIS IS GIVEN AS THE -GENADR OF
R0104 THAT LOCATION WHICH CONTAINS THE DELTA TIME. IF THE OLD PRIORITY OR DELTA TIME IS TO BE USED, THAT WHICH IS
R0106 ALREADY IN THE VARIABLE STORAGE, THEN D IS SET TO 0. NEXT THE A BIT IS USED. IF IT IS SET TO 0, THE ADDRESS
R0108 THAT WOULD BE RESTARTED DURING A RESTART IS THE NEXT LOCATION AFTER THE PHASE INFORMATION, THAT IS, EITHER
R0110 (TC PHASCHNG) +2 OR +3, DEPENDING ON WHETHER D HAD BEEN SET OR NOT. IF A IS SET TO 1, THEN THE ADDRESS THAT
R0112 WOULD BE RESTARTED IS THE 2CADR THAT IS READ FROM THE NEXT TWO LOCATIONS. EXAMPLES,

A0114	AD	TC	PHASCHNG	THIS WOULD CAUSE LOCATION AD +3 TO BE
A0115	AD+1	OCT	05023	RESTARTED BY GROUP THREE WITH PRIORITY
A0116	AD+2	OCT	23000	OF 23. NOTE UPON RETURNING IT WOULD
A0117	AD+3			ALSO GO TO AD+3
A0118	AD	TC	PHASCHNG	GROUP 1 WOULD CAUSE CALLCALL TO
A0119	AD+1	OCT	27441	BE STARTED AS A LONGCALL FROM THE TIME
A0120	AD+2	-GENADR	DELTIME	STORED IN LONGBASE (LONGBASE WAS SET) BY
A0121	AD+3	2CADR	CALLCALL	A DELTATIME STORED IN DELTIME. THE
A0122	AD+4			BEGON OF THE 2CADR SHOULD CONTAIN THE E
A0123	AD+5			BANK OF DELTIME. PHASCHNG RETURNS TO
A0124				LOCATION AD+5

R0125 NOTE THAT IF A VARIABLE PRIORITY IS GIVEN FOR A JOB, THE JOB WILL BE RESTARTED AS A NOVAC IF THE PRIORITY IS
R0127 NEGATIVE, AS A FINDVAC IF THE PRIORITY IS POSITIVE.
R0128 TYPE B PHASCHNG IS A COMBINATION OF VARIABLE AND FIXED PHASE CHANGES. IT WILL START UP A JOB AS INDICATED
R0130 BELOW AND ALSO START UP ONE FIXED RESTART, THAT IS EITHER AN G.1 OR A G.000 OR THE FIRST ENTRY OF G.EVEN
R0132 DOUBLE ENTRY. THE BIT INFORMATION IS AS FOLLOWS,

R0133 TL1 DAP PPP PPP GGG

R0134 WHERE EACH LETTER OR NUMBER STANDS FOR A BIT. THE G'S STAND FOR THE GROUP, OCTAL 1 - 7. THE P'S FOR THE FIXED
R0136 PHASE INFORMATION, OCTAL 0 - 127. 1 MUST BE 1. AND AGAIN T STANDS FOR THE TBASE AND L FOR LONGBASE. D THIS
R0138 TIME STANDS ONLY FOR PRIORITY SINCE THIS WILL BE CONSIDERED A JOB, AND IT MUST BE GIVEN DIRECTLY IF GIVEN.
R0140 AGAIN A STANDS FOR THE ADDRESS OF THE LOCATION TO BE RESTARTED, 1 IF THE 2CADR IS GIVEN, OR 0 IF IT IS TO BE
R0142 THE NEXT LOCATION. (THE RETURN LOCATION OF PHASCHNG) EXAMPLES,

A0143	AD	TC	PHASCHNG	TBASE IS SET AND ARESTART CAUSE GROUP 3
A0144	AD+1	OCT	56043	TO START THE JOB AJORAJOB WITH PRIORITY
A0145	AD+2	OCT	31000	31 AND THE FIRST ENTRY OF 3.4SPOT(WE CAN
A0146	AD+3	2CADR	AJORAJOB	ASSUME IT IS A TASK SINCE WE SET TBASE3)
A0147	AD+4			UPON RETURN FROM PHASCHNG CONTROL WOULD
A0148	AD+5			GO TO AD+5
A0149	AD	TC	PHASCHNG	UPON A RESTART THE LAST DISPLAY WOULD BE
A0150	AD+1	OCT	10015	RESTARTED AND A JOB WITH THE PREVIOUSLY
A0151	AD+2			STORED PRIORITY WOULD BE BEGUN AT AD+2
A0152				BY MEANS OF GROUP 5



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R0153 THE NOVAC-PINDVAC CHOICE FOR JOBS HOLDS HERE ALSO - NEGATIVE PRIORITY CAUSES A NOVAC CALL, POSITIVE A PINDVAC.
R0155 SUMMARY OF BITS

R0156 TYPE A TL0 00P PPP PPP GGG

R0157 TYPE B TL1 DAP PPP PPP GGG

R0158 TYPE C TL0 1AD XXX CJW GGG



L PHASE TABLE MAINTENANCE

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P0159 2PHSCHNG IS USED WHEN ONE WISHES TO START UP A GROUP OR CHANGE A GROUP WHILE UNDER THE CONTROL OF A DIFFERENT
R0161 GROUP. FOR EXAMPLE, CHANGE THE PHASE OF GROUP 3 WHILE THE PORTION OF THE PROGRAM IS UNDER GROUP 5. ALL 2PHSCHNG
R0163 CALLS ARE MADE IN THE FOLLOWING MANNER,

A0164 TC 2PHSCHNG
A0165 OCT XXXXX
A0166 OCT YYYY

R0167 WHERE OCT XXXXX MUST BE OF TYPE A AND OCT YYYY MAY BE OF EITHER TYPE A OR TYPE B OR TYPE C. THERE IS ONE
R0169 DIFFERENCE --- NOTE- IF LONGBASE IS TO BE SET THIS INFORMATION IS GIVEN IN THE OCT YYYY INFORMATION, IT WILL
R0171 BE DISREGARDED IF GIVEN WITH THE OCT XXXXX INFORMATION. A COUPLE OF EXAMPLES MAY HELP,

A0173 AD TC 2PHSCHNG SET TRASE3 AND IF A RESTART OCCURS START
A0174 AD+1 OCT 40083 THE TWO ENTRIES IN 3.8 TABLE LOCATION
A0175 AD+2 OCT 05025 THIS IS OF TYPE C, SET THE JOB TO BE
A0176 AD+3 OCT 18000 TO BE LOCATION AD+4, WITH A PRIORITY 18,
A0177 AD+4 FOR GROUP 5 PHASE INFORMATION

0178 REF 3 LAST 1372 TO 1372' 14 34* COUNT 02/PHASE

0179 5261 0 0004 0 2PHSCHNG INHINT

THE ENTRY FOR A DOUBLE PHASE CHANGE

0180 REF 309 LAST 1372 5262 50 002 0 NDX 0

0181 5263 3 0000 1 CA 0

0182 REF 310 LAST 1377 5264 24 002 0 INCR 0

0183 REF 1 5265 54 072 0 TS TEMPP2

0184 REF 1 5266 7 4716 1 MASK OCT7

0185 5267 6 0000 1 DOUBLE

0186 REF 1 5270 54 071 0 TS TEMPG2

0187 REF 2 LAST 1377 5271 3 0072 1 CA TEMPP2

0188 REF 1 5272 7 4765 0 MASK OCT17770

0189 5273 0 0006 1 EXTEND

0190 REF 32 LAST 1363 5274 7 4677 1 MP BIT12

0191 REF 3 LAST 1377 5275 56 072 1 XCH TEMPP2

NEED ONLY 1770, BUT WHY GET A NEW CONST.

0192 REF 50 LAST 1363 5276 7 4674 1 MASK BIT15

0193 REF 1 5277 54 066 0 TS TEMPSW2

INDICATES WHETHER TO SET TRASE OR NOT

0194 REF 100 LAST 1317 5300 1 5304 1 TOP PHASCHNG +3

0195 5301 0 0004 0 PHASCHNG INHINT

0196 REF 157 LAST 1338 5302 3 4712 1 CA ONE

0197 REF 2 LAST 1377 5303 54 066 0 TS TEMPSW2

INDICATESWE CAME FROM A PHASCHNG ENTRY

0198 REF 311 LAST 1377 5304 50 002 0 NDX 0

0199 5305 3 0000 1 CA 0

0200 REF 312 LAST 1377 5306 24 002 0 INCR 0

0201 REF 1 5307 54 065 0 TS TEMPSW



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0202			5310	0 0006 1	EXTEND		
0203	REP	1	5311	3 5314 1	DCA	ADRPCN2	OFF TO SWITCHED BANK
0204			5312	52 006 0	DTCB		
0205	REP	47	LAST 1384	E3,1400	EBANK=	LST1	
0206	REP	1		5313	02355 0	ADRPCN2	2CADR PHSCN2
0206	REP	1		5314	20103 1		
0207	REP	1		5315	22 073 0	ONEORTWO	LXCH TEMPBBN
0208	REP	32	LAST 1372	5316	22 006 1	LXCH	BBANK
0209	REP	2	LAST 1378	5317	22 073 0	LXCH	TEMPBBN
0210	REP	1		5320	7 4781 1	MASK	OCT14000
0211	REP	351	LAST 1369	5321	10 000 0	CCS	A
0212	REP	1		5322	1 5383 0	TOP	CHECKB
0213	REP	1		5323	3 0062 0	CA	TEMP
0214	REP	54	LAST 1363	5324	7 4704 1	MASK	BIT7
0215	REP	352	LAST 1378	5325	10 000 0	CCS	A
0216	REP	1		5326	1 5350 0	TOP	GETPRIO
0217	REP	4	LAST 215	5327	50 061 0	OLDPRI	NDX
0218	REP	1		5330	3 1052 1	CA	TEMP
0219	REP	1		5331	54 070 1	TS	PHSPROT1 -2
0220	REP	2	LAST 1378	5332	3 0062 0	CON1	CA
0221	REP	29	LAST 1363	5333	7 4703 0	MASK	TEMP
0222	REP	353	LAST 1378	5334	10 000 0	CCS	BIT8
0223	REP	1		5335	1 5354 1	TOP	A
0224	REP	313	LAST 1377	5336	3 0002 0	CA	GETNEWNM
0225	REP	1		5337	54 063 0	TS	O
0226	REP	1		5340	3 0006 1	CA	TEMPNM
0227				5341	0 0008 1	CA	BB
0228	REP	23	LAST 1202	5342	04 007 1	EXTEND	
0229	REP	1		5343	54 064 1	ROR	PICK UP USERS SUPERBANK
0230	REP	1		5344	3 5347 1	TOCON2	CA
0231	REP	3	LAST 1378	5345	22 073 0	LXCH	CON2ADR
0232				5346	52 006 0	DTCB	TEMPBBN
0233	REP	1		5347	02443 0	CON2ADR	GENADR CON2
0234	REP	314	LAST 1378	5350	50 002 0	GETPRIO	NDX
0235				5351	3 0000 1	CA	O
0236	REP	315	LAST 1378	5352	24 002 0	INCR	O
0237	REP	1		5353	1 5331 1	TOP	CON1 -1
0238				5354	0 0008 1	GETNEWNM	EXTEND

DON'T CARE IF DIRECT OR INDIRECT
LEAVE THAT DECISION TO RESTARTS
OBTAIN RETURN ADDRESS

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0239	REP 316	LAST 1378	5355	5 0002 0	INDEX	0
0240			5356	3 0001 0	DCA	0
0241	REP 2	LAST 1378	5357	52 064 1	DXCH	TEMPNM
0242	REP 68	LAST 1295	5360	3 4711 1	CA	TWO
0243	REP 317	LAST 1379	5361	28 002 1	ADS	0
0244	REP 1		5362	1 5344 0	TOP	TOCON2
0245	REP 6	LAST 665	4761		OCT14000	EQUALS PRIO14
0246	REP 13	LAST 1335	0061		TEMPO	EQUALS ITEMPI
0247	REP 16	LAST 1335	0062		TEMPP	EQUALS ITEMPI2
0248	REP 4	LAST 66	0063		TEMPNM	EQUALS ITEMPI3
0249	REP 3	LAST 66	0064		TEMPBB	EQUALS ITEMPI4
0250	REP 2	LAST 68	0065		TEMPSW	EQUALS ITEMPI5
0251	REP 3	LAST 154	0066		TEMPSW2	EQUALS ITEMPI6
0252	REP 27	LAST 1372	0070		TEMPPR	EQUALS RUPTREG1
0253	REP 6	LAST 145	0071		TEMPO2	EQUALS RUPTREG2
0254	REP 5	LAST 1075	0072		TEMPP2	EQUALS RUPTREG3
0255	REP 5	LAST 1075	0073		TEMPBBON	EQUALS RUPTREG4
0256	REP 33	LAST 1378	0006		BB	EQUALS BBANK
0257			14,3744		BANK	14
0258	REP 2	LAST 1372	10,2000		SETLOC	PHASETAB
0259			10,2355		BANK	
0260	REP 1		E3,1436		BBANK=	PHSNAME1
0261	REP 2	LAST 1372 TO 1377	9 9*		COUNT	10/PHASE
0262	REP 4	LAST 1378	10,2355	22 073 0	PHSCHNG2	LXCH
0263	REP 2	LAST 1377	10,2356	3 0065 1	CA	TEMPBBON
0264	REP 2	LAST 1377	10,2357	7 4718 1	CA	TEMPSW
0265			10,2360	6 0000 1	MASK	OCT7
0266	REP 5	LAST 1378	10,2361	54 061 1	DOUBLE	
0267	REP 3	LAST 1379	10,2362	3 0065 1	TS	TEMPO
0268	REP 2	LAST 1377	10,2363	7 4765 0	CA	TEMPSW
0269			10,2364	0 0006 1	MASK	OCT17770
0270	REP 33	LAST 1377	10,2365	7 4677 1	EXTEND	
0271	REP 3	LAST 1378	10,2366	54 062 1	MP	BIT12
0272	REP 4	LAST 1379	10,2367	3 0065 1	TS	TEMPP
0273	REP 14	LAST 904	10,2370	7 4105 0	CA	TEMPSW
0274	REP 5	LAST 1379	10,2371	56 085 1	MASK	OCT60000
0275	REP 2	LAST 1378	10,2372	7 4761 1	XCH	TEMPSW
0276	REP 354	LAST 1378	10,2373	10 000 0	MASK	OCT14000
0277	REP 1		10,2374	1 5315 1	CCS	A
					TOP	ONEORTWO

OBTAIN RETURN ADDRESS



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0276	REP	4	LAST 1379	10,2375	3 0062 0	CA	TEMPP
0279	REP	6	LAST 1379	10,2376	50 081 0	NDX	TEMPP
0280	REP	2	LAST 165	10,2377	54 751 0	TS	PHASE1 -2
0281	REP	3	LAST 1377	10,2400	10 066 0	BELOW1	CCS
0282	REP	1		10,2401	1 2415 1	TCP	TEMPSW2
0283				10,2402	1 2403 0		BELOW2
0284	REP	4	LAST 1377	10,2403	4 0072 0	TCP	+1
0285	REP	5	LAST 1380	10,2404	22 072 1	CS	TEMPP2
0286	REP	2	LAST 1377	10,2405	50 071 1	LXCH	TEMPP2
0287	REP	5	LAST 215	10,2406	52 751 0	NDX	TEMPP2
						DXCH	-PHASE1 -2
0288	REP	4	LAST 1380	10,2407	10 066 0	CCS	TEMPSW2
0289				10,2410	12 411 0	NOOP	
0290	REP	2	LAST 1380	10,2411	1 2415 1	TCP	BELOW2
0291	REP	19	LAST 1071	10,2412	4 0025 1	CS	TIME1
0292	REP	3	LAST 1360	10,2413	50 071 1	NDX	TEMPP2
0293	REP	4	LAST 385	10,2414	55*051 0	TS	THASE1 -2
0294	REP	6	LAST 1379	10,2415	10 085 0	BELOW2	CCS
0295	REP	1		10,2418	1 2431 1	TCP	TEMPSW
0296	REP	1		10,2417	1 2434 1	TCP	BELOW3
						TCP	BELOW4
0297	REP	20	LAST 1360	10,2420	4 0025 1	CS	TIME1
0298	REP	7	LAST 1380	10,2421	50 061 0	NDX	TEMPP
0299	REP	5	LAST 1360	10,2422	55*051 0	TS	THASE1 -2
0300	REP	7	LAST 1380	10,2423	3 0085 1	CA	TEMPSW
0301	REP	1		10,2424	6 2427 1	AD	BIT14COM
0302	REP	355	LAST 1379	10,2425	10 000 0	CCS	A
0303				10,2426	12 427 0	NOOP	
0304				10,2427	17777 0	BIT14COM	17777
0305	REP	2	LAST 1360	10,2430	1 2434 1	TCP	BELOW4
0306				10,2431	0 0006 1	BELOW3	EXTEND
0307	REP	29	LAST 1299	10,2432	3 0025 0	DCA	TIME2
0308	REP	1		10,2433	53*138 0	DXCH	LONGBASE
0309	REP	5	LAST 1380	10,2434	4 0082 1	BELOW4	CS
0310	REP	8	LAST 1380	10,2435	50 081 0	NDX	TEMPP
0311	REP	6	LAST 1380	10,2438	54 750 1	TS	TEMPP
							-PHASE1 -2
0312	REP	318	LAST 1379	10,2437	3 0002 0	CA	O
0313	REP	5	LAST 1379	10,2440	22 073 0	LXCH	TEMPBBON
0314				10,2441	0 0003 1	RELINT	
0315				10,2442	52 006 0	DTCB	
0316	REP	6	LAST 1380	10,2443	22 073 0	CON2	LXCH
							TEMPBBON

START STORING THE PHASE INFORMATION

IS IT A PHASCHNG OR A 2PHSCHNG
IT'S A PHASCHNG

IT'S A 2PHSCHNG

CAN'T GET HERE

SEE IF WE SHOULD SET THASE OR LONGBASE
SET LONGBASE ONLY
SET NEITHER

SET THASE TO BEGIN WITH

SHALL WE NOW SET LONGBASE

***** CANT GET HERE *****
***** CANT GET HERE *****
NO WE NEED ONLY SET THASE

SET LONGBASE

AND STORE THE FINAL PART OF THE PHASE



L PHASE TABLE MAINTENANCE

0317 REP 6 LAST 1380 10,2444 3 0062 0
0318 REP 9 LAST 1380 10,2445 50 061 0
0319 REP 3 LAST 1380 10,2446 54 751 0

0320 REP 2 LAST 1378 10,2447 3 0070 0
0321 REP 10 LAST 1381 10,2450 50 061 0
0322 REP 2 LAST 1378 10,2451 55-052 0

0323 10,2452 0 0006 1
0324 REP 3 LAST 1379 10,2453 3 0064 0
0325 REP 11 LAST 1381 10,2454 50 061 0
0326 REP 2 LAST 1379 10,2455 53-435 0

0327 REP 1 10,2456 1 2400 0

0328 5363
0329 REP 4 LAST 1373 4000
0330 5363

0331 REP 4 LAST 1377 TO 1379' 66 100*

0332 REP 34 LAST 1379 5363 7 4677 1 CHECKB
0333 REP 356 LAST 1380 5364 10 000 0
0334 REP 2 LAST 1378 5365 1 5350 0

0335 REP 1 5366 1 5327 0

CA TEMPP
NDX TEMPO
TS PHASE1 -2

CA TEMPPR
NDX TEMPO
TS PHSPROT1 -2

EXTEND
DCA TEMPPR
NDX TEMPO
DXCH PHNAME1 -2

TCP BELOW1

BLOCK 02
SETLOC PPTAG1
BANK

COUNT 02/PHASE

MASK BIT12
CCS A
TCP GETPRIO

TCP OLDPRIO

SINCE THIS IS OF TYPE B, THIS BIT SHOULD
BE HERE IF WE ARE TO GET A NEW PRIORITY
IT IS, SO GET NEW PRIORITY

IT ISN'T, USE THE OLD PRIORITY

L RESTARTS ROUTINE

0001			01,3520		BANK 01	
0002	REP 2	LAST 208	01,2000		SETLOC RESTART	
0003			01,3520		BANK	
0004	REP 3	LAST 1381	E3,1436		EBANK= PHISNAME1	GOPROG MUST SWITCH TO THIS EBANK
0005	REP 1				COUNT 01/RSROU	
0006	REP 688	LAST 1338	01,3520 3 0181 1	RESTARTS CA	MPAC +5	GET GROUP NUMBER -1
0007			01,3521 6 0000 1	DOUBLE		SAVE FOR INDEXING
0008	REP 1		01,3522 54 155 1	TS	TEMP2G	
0009	REP 1		01,3523 3 3782 1	CA	PHS2CADR	SET UP EXIT IN CASE IT IS AN EVEN
0010	REP 1		01,3524 54 157 0	TS	TEMPSWCH	TABLE PHASE
0011	REP 1		01,3525 3 3557 0	CA	RTRNCADR	TO SAVE TIME ASSUME IT WILL GET NEXT
0012	REP 1		01,3526 54 707 0	TS	GOLOC +2	GROUP AFTER THIS
0013	REP 1		01,3527 3 0154 1	CA	TEMPPHS	
0014	REP 9	LAST 1384	01,3530 7 4744 0	MASK	OCT1400	
0015	REP 357	LAST 1381	01,3531 10 000 0	CCS	A	IS IT A VARIABLE OR TABLE RESTART
0016	REP 1		01,3532 1 3543 1	TCF	ITSAVAR	IT'S A VARIABLE RESTART
0017	REP 2	LAST 1382	01,3533 10 154 0	GETPART2 CCS	TEMPPHS	IS IT AN X.1 RESTART
0018	REP 358	LAST 1382	01,3534 10 000 0	CCS	A	
0019	REP 1		01,3535 1 3643 1	TCF	ITSATBL	NO, ITS A TABLE RESTART
0020	REP 7	LAST 1379	01,3536 3 4781 0	CA	PRI014	IT IS AN X.1 RESTART, THEREFORE START
0021	REP 31	LAST 1283	01,3537 0 5042 1	TC	FINDVAC	THE DISPLAY RESTART JOB
0022	REP 48	LAST 1378	E3,1400	EBANK=	LST1	
0023	REP 1		01,3540 03185 0	2CADR	INITDSP	
0023	REP 1		01,3541 20103 1			
0024	REP 2	LAST 1382	01,3542 0 3557 0	TC	RTRNCADR	FINISHED WITH THIS GROUP, GET NEXT ONE
0025	REP 10	LAST 1382	01,3543 7 4744 0	ITSAVAR MASK	OCT1400	IS IT TYPE B *
0026	REP 359	LAST 1382	01,3544 10 000 0	CCS	A	
0027	REP 1		01,3545 1 3614 0	TCF	ITSLIKEB	YES, IT IS TYPE B
0028			01,3546 0 0008 1	EXTEND		
0029	REP 2	LAST 1382	01,3547 5 0155 0	NDX	TEMP2G	STORE THE JOB (OR TASK) 2CADR FOR EXIT
0030	REP 4	LAST 1382	01,3550 3 1437 0	DCA	PHISNAME1	
0031	REP 2	LAST 1382	01,3551 52 708 1	DXCH	GOLOC	
0032	REP 3	LAST 1382	01,3552 3 0154 1	CA	TEMPPHS	SEE IF THIS IS A JOB, TASK, OR A LONGCAL
0033	REP 3	LAST 1379	01,3553 7 4718 1	MASK	OCT7	
0034	REP 3	LAST 1228	01,3554 6 7715 0	AD	MINUS2	
0035	REP 380	LAST 1382	01,3555 10 000 0	CCS	A	
0036	REP 1		01,3558 1 3728 0	TCF	ITSUNGCL	ITS A LONGCALL

L RESTARTS ROUTINE

```

0037 REP 6 LAST 296 01,3557 0 4570 1 RTNRCADR TC SWRTURN
0038 REP 1 01,3560 1 3562 1 TCP ITSAWAIT
0039 REP 1 01,3561 1 3627 0 TCP ITSAJOB
0040 REP 1 01,3562 3 3766 0 ITSAWAIT CA WILTCADR
0041 REP 3 LAST 1382 01,3563 54 704 0 TS GOLOC -1
0042 REP 3 LAST 1382 01,3564 50 155 0 NDX TEMP2G
0043 REP 3 LAST 1381 01,3565 3 1054 1 CA PHSPROT1
0044 REP 361 LAST 1382 01,3566 10 000 0 TIMETEST CCS A
0045 REP 362 LAST 1363 01,3567 24 000 1 INCR A
0046 REP 1 01,3570 1 3573 1 TCP FINDTIME
0047 REP 1 01,3571 1 5367 1 TCP ITSINDIR
0048 REP 1 01,3572 1 3612 0 TCP IMMEDIATE

R0049 ***** THIS MUST BE IN FIXED FIXED *****

0050 5367 BLOCK 02
0051 REP 2 LAST 622 4000 SETLOC PPTAG2
0052 5367 BANK
0053 REP 1 COUNT 02/RSROU
0054 REP 4 LAST 1363 5367 22 706 0 ITSINDIR LXCH GOLOC +1
0055 REP 2 LAST 1378 5370 22 006 1 LXCH BB
0056 REP 363 LAST 1383 5371 50 000 1 NDX A
0057 5372 3 0001 0 CA 1
0058 REP 3 LAST 1383 5373 22 006 1 LXCH BB
0059 REP 5 LAST 1363 5374 22 706 0 LXCH GOLOC +1
0060 REP 2 LAST 1383 5375 1 3573 1 TCP FINDTIME

R0061 ***** YOU MAY RETURN TO SWITCHED FIXED *****

0062 01,3573 BANK 01
0063 REP 3 LAST 1382 01,2000 SETLOC RESTART
0064 01,3573 BANK
0065 REP 2 LAST 1382 TO 1383' 43 43* COUNT 01/RSROU
0066 01,3573 4 0000 0 FINDTIME COM
0067 REP 221 LAST 1371 01,3574 54 001 1 TS L
0068 REP 4 LAST 1363 01,3575 50 155 0 NDX TEMP2G
0069 REP 6 LAST 1360 01,3576 4 1053 1 CS TBASE1
0070 01,3577 0 0006 1 EXTEND

```

USER=3 PAGE NO. 2 E3 S4

CANT GET HERE

ITS A JOB

SET UP WAITLIST CALL

DIRECTLY STORED

IS IT AN IMMEDIATE RESTART

NO,
FIND OUT WHEN IT SHOULD BEGIN

STORED INDIRECTLY

IT WANTS AN IMMEDIATE RESTART

GET THE CORRECT'E BANK IN CASE THIS IS
SWITCHED ERRASIBLE

GET THE TIME INDIRECTLY

RESTORE THE BB AND GOLOC

FIND OUT WHEN IT SHOULD BEGIN

MAKE NEGITIVE SINCE IT WILL BE SUBTRACTD
AND SAVE

L RESTARTS ROUTINE

0071	REP	21	LAST 1380	01,3600	60 025 0	SU	TIME1
0072	REP	384	LAST 1383	01,3601	10 000 0	CCS	A
0073				01,3602	4 0000 0	COM	
0074	REP	4	LAST 918	01,3603	6 7700 1	AD	OCT37776
0075	REP	158	LAST 1377	01,3604	6 4712 1	AD	ONE
0076	REP	222	LAST 1383	01,3605	6 0001 0	AD	L
0077	REP	385	LAST 1384	01,3606	10 000 0	CCS	A
0078	REP	253	LAST 1383	01,3607	3 4714 1	CA	ZERO
0079				01,3610	1 3612 0	TCP	+2
0080				01,3611	1 3612 0	TCP	+1
0081	REP	159	LAST 1384	01,3612	6 4712 1	IMMEDIATE AD	ONE
0082	REP	6	LAST 1383	01,3613	0 0704 1	TC	GOLOC -1
0083	REP	3	LAST 1382	01,3614	3 3557 0	ITS LIKEB CA	RTRNCADR
0084	REP	2	LAST 1382	01,3615	54 157 0	TS	TEMPSWCH
0085	REP	1		01,3616	3 3763 0	CA	PRT2CADR
0086	REP	7	LAST 1384	01,3617	54 707 0	TS	GOLOC +2
0087	REP	4	LAST 1382	01,3620	3 0154 1	CA	TEMPHIS
0088	REP	1		01,3621	7 6043 1	MARK	OCT177
0089	REP	5	LAST 1384	01,3622	54 154 0	TS	TEMPHIS
0090				01,3623	0 0006 1	EXTEND	
0091	REP	5	LAST 1383	01,3624	5 0155 0	NDX	TEMP2G
0092	REP	5	LAST 1382	01,3625	3 1437 0	DCA	PHSNAME1
0093	REP	8	LAST 1384	01,3626	52 706 1	DXCH	GOLOC
0094	REP	6	LAST 1384	01,3627	50 155 0	ITSAJOB NDX	TEMP2G
0095	REP	4	LAST 1383	01,3630	3 1054 1	CA	PHSPROT1
0096	REP	9	LAST 1384	01,3631	54 704 0	CHNOVAC TS	GOLOC -1
0097				01,3632	0 0006 1	EXTEND	
0098	REP	1		01,3633	6 3637 0	BZMP	ITSNOVAC
0099	REP	1		01,3634	3 3765 0	CAP	PVACCADR
0100	REP	10	LAST 1384	01,3635	56 704 1	XCH	GOLOC -1
0101	REP	11	LAST 1384	01,3636	0 0704 1	TC	GOLOC -1
0102	REP	1		01,3637	3 3767 1	ITSNOVAC CAP	NOVACADR
0103	REP	12	LAST 1384	01,3640	56 704 1	XCH	GOLOC -1
0104				01,3641	4 0000 0	COM	
0105	REP	13	LAST 1384	01,3642	0 0704 1	TC	GOLOC -1
0106	REP	45	LAST 1388	01,3643	54 020 1	ITSATBL TS	CYR
0107	REP	46	LAST 1384	01,3644	10 020 1	CCS	CYR
0108				01,3645	1 3646 1	TCP	+1
0109	REP	1		01,3646	1 3744 1	TCP	ITSEVEN
0110	REP	4	LAST 1384	01,3647	3 3557 0	CA	RTRNCADR
0111	REP	14	LAST 1384	01,3650	54 707 0	TS	GOLOC +2

TYPE B, SO STORE RETURN IN
TEMPSWCH IN CASE OF AN EVEN PHASE

SET UP EXIT TO GET TABLE PART OF THIS
VARIABLE TYPE OF PHASE

MAKE THE PHASE LOOK RIGHT FOR THE TABLE
PART OF THIS VARIABLE PHASE

OBTAIN THE JOB'S 2CADR

NOW ADD THE PRIORITY AND LET'S GO

SAVE PRIO UNTIL WE SEE IF ITS
A FINDVAC OR A NOVAC

POSITIVE, SET UP FINDVAC CALL.
PICK UP PRIO,
AND GO

NEGATIVE,
SET UP NOVAC CALL,
CORRECT PRIO,
AND GO

FIND OUT IF THE PHASE IS ODD OR EVEN

IT'S EVEN

IN CASE THIS IS THE SECOND PART OF A
TYPE B RESTART, WE NEED PROPER EXIT



L. RESTARTS ROUTINE

USER'S PAGE NO. 4 E3 S4

0112	REF	6	LAST 1384	01,3851	3 0154 1	CA	TEMPHS
0113	REF	34	LAST 1371	01,3852	54 021 0	TS	SR
0114	REF	35	LAST 1385	01,3853	8 0021 1	AD	SR
0115	REF	7	LAST 1384	01,3854	50 155 0	NDX	TEMP2G
0116	REF	1		01,3855	8 2001 1	AD	SIZETAB +1
0117	REF	1		01,3856	54 156 1	TS	POINTER

SET UP POINTER FOR FINDING OUR PLACE IN
THE RESTART TABLES

0118				01,3857	0 0006 1	CONTRL2	EXTEND
0119	REF	2	LAST 1385	01,3860	5 0156 0	NDX	POINTER
0120	REF	1		01,3861	3 2002 1	DCA	CADRTAB

FIND OUT WHAT'S IN THE TABLE

GET THE 2CADR

0121	REF	15	LAST 1384	01,3862	22 708 0	LXCH	GOLOC +1
0122	REF	366	LAST 1384	01,3863	10 000 0	CCS	A
0123	REF	367	LAST 1385	01,3864	24 000 1	INCR	A
0124	REF	1		01,3865	1 3740 0	TCP	ITSAJOB2

STORE THE BB INFORMATION

IS IT A JOB OR IS IT TIMED
POSITIVE, MUST BE A JOB

0125	REF	368	LAST 1385	01,3866	24 000 1	INCR	A
0126	REF	16	LAST 1385	01,3867	54 705 1	TS	GOLOC

MUST BE EITHER A WAITLIST OR LONGCALL
LET-S STORE THE CORRECT CADR

0127	REF	2	LAST 1383	01,3870	3 3768 0	CA	WTLICADR
0128	REF	17	LAST 1385	01,3871	54 704 0	TS	GOLOC -1

SET UP OUR EXIT TO WAITLIST

0129	REF	18	LAST 1385	01,3872	3 0708 0	CA	GOLOC +1
0130	REF	38	LAST 1383	01,3873	7 4701 1	MASK	BIT10
0131	REF	369	LAST 1385	01,3874	10 000 0	CCS	A

NOW FIND OUT IF IT IS A WAITLIST CALL
THIS SHOULD BE ONE IF WE HAVE -BB
FOR THAT MATTER SO SHOULD BE BITS 9,8,7,
6,5, AND LAST BUT NOT LEAST (PERHAPS NOT
IN IMPORTANCE ANYWAY, BIT 4
IT IS A WAITLIST CALL

0132						TCP	ITSWILST
0133							
0134	REF	1		01,3875	1 3733 1		

OBTAIN THE ORIGINAL DELTA T
ADDRESS FOR THIS LONGCALL

0135	REF	3	LAST 1385	01,3876	50 158 0	NDX	POINTER
0136	REF	1		01,3877	3 2000 0	CA	PROTAB

NOW GO GET THE DELTA TIME

0137	REF	1		01,3700	1 5378 1	TCP	ITSLGCL1
------	-----	---	--	---------	----------	-----	----------

0138 ***** THIS MUST BE IN FIXED FIXED *****

0139				5378		BLOCK	02
0140	REF	3	LAST 1383	4000		SETLOC	PFTAG2
0141				5376		BANK	

0142	REF	2	LAST 1383 TO 1383'	7	7*	COUNT	02/RSROU
------	-----	---	--------------------	---	----	-------	----------

0143	REF	19	LAST 1385	5376	22 708 0	ITSLGCL1	LXCH GOLOC +1
0144	REF	4	LAST 1383	5377	22 008 1	LXCH	BB
0145	REF	20	LAST 1385	5400	22 708 0	LXCH	GOLOC +1

OBTAIN THE CORRECT E BANK

AND PRESERVE OUR E AND F BANKS

0146				5401	0 0008 1	EXTEND	
0147	REF	370	LAST 1385	5402	5 0000 1	NDX	A
0148				5403	3 0001 0	DCA	0

GET THE DELTA TIME



L RESTARTS ROUTINE

USER=5 PAGE NO. 5 E3 S4

0149 REP 21 LAST 1385 5404 22 706 0 LXCH GOLOC +1
0150 REP 5 LAST 1385 5405 22 008 1 LXCH BB
0151 REP 22 LAST 1386 5406 22 706 0 LXCH GOLOC +1
0152 REP 1 5407 1 3701 0 TCP ITSLOCL2
R0153 ***** YOU MAY RETURN TO SWITCHED FIXED *****
0154 01,3701 BANK 01
0155 REP 4 LAST 1383 01,2000 SETLOC RESTART
0156 01,3701 BANK
0157 REP 3 LAST 1383 TO 1385' 70 113* COUNT 01/RSROU
0158 REP 6 LAST 1204 01,3701 53=140 1 ITSLOCL2 DXCH LONGTIME
0159 01,3702 0 0008 1 EXTEND
0160 REP 30 LAST 1380 01,3703 4 0025 1 DCS TIME2
0161 REP 7 LAST 1386 01,3704 21=140 1 DAS LONGTIME
0162 01,3705 0 0008 1 EXTEND
0163 REP 2 LAST 1380 01,3708 3 1138 1 DCA LONGBASE
0164 REP 8 LAST 1386 01,3707 21=140 1 DAS LONGTIME
0165 REP 9 LAST 1388 01,3710 11=137 1 CCS LONGTIME
0166 REP 1 01,3711 1 3721 1 TCP LONGLOCL
0167 01,3712 1 3714 1 TCP +2
0168 REP 2 LAST 1383 01,3713 1 3807 1 TCP IMMEDIATE -3
0169 REP 10 LAST 1386 01,3714 11=140 1 CCS LONGTIME +1
0170 REP 2 LAST 1388 01,3715 1 3721 1 TCP LONGLOCL
0171 01,3716 13 717 1 NOOP
0172 REP 3 LAST 1386 01,3717 1 3807 1 TCP IMMEDIATE -3
0173 REP 4 LAST 1388 01,3720 1 3812 0 TCP IMMEDIATE
0174 REP 1 01,3721 3 3764 1 LONGLOCL CA LOCLCADR
0175 REP 23 LAST 1386 01,3722 54 704 0 TS GOLOC -1
0176 01,3723 0 0008 1 EXTEND
0177 REP 11 LAST 1368 01,3724 3 1140 0 DCA LONGTIME
0178 REP 24 LAST 1388 01,3725 0 0704 1 TC GOLOC -1
0179 REP 3 LAST 1385 01,3726 3 3766 0 ITSLOCL CA WILTCADR
0180 REP 25 LAST 1388 01,3727 54 704 0 TS GOLOC -1
0181 REP 8 LAST 1385 01,3730 50 155 0 NDX TEMP2G
0182 REP 5 LAST 1384 01,3731 4 1054 0 CS PHSPROT1
0183 REP 2 LAST 1385 01,3732 1 5378 1 TCP ITSLOCL1
0184 REP 26 LAST 1388 01,3733 4 0708 1 ITSWILST CS GOLOC +1
0185 REP 27 LAST 1386 01,3734 54 706 1 TS GOLOC +1

RESTORE OUR E AND F BANK
RESTORE THE TASKS E AND F BANKS
AND PRESERVE OUR L

NOW LET'S PROCESS THIS LONGCALL

CALCULATE TIME LEFT

FIND OUT HOW THIS SHOULD BE RESTARTED

CAN'T GET HERE *****

WE WILL GO TO LONGCALL

PREPARE OUR ENTRY TO LONGCALL

ASSUME IT WILL GO TO WAITLIST

GET THE DELTA T ADDRESS

NOW GET THE DELTA TIME

CORRECT THE RECON INFORMATION

L RESTARTS ROUTINE

USER'S PAGE NO. 6 E3 S4

0186	REP	4	LAST 1385	01,3735	50 156 0	NDX	POINTER
0187	REP	2	LAST 1385	01,3736	3 2000 0	CA	PROTDAB
0188	REP	1		01,3737	1 3566 0	TCP	TIMETEST
0189	REP	28	LAST 1386	01,3740	56 705 0	ITSAJOB2	XCH GOLOC
0190	REP	5	LAST 1387	01,3741	50 156 0	NDX	POINTER
0191	REP	3	LAST 1387	01,3742	3 2000 0	CA	PROTDAB
0192	REP	1		01,3743	1 3831 1	TCP	CHNOVAC
0193	REP	3	LAST 1384	01,3744	3 0157 1	ITSEVEN	CA TEMPSWCH
0194	REP	29	LAST 1387	01,3745	54 707 0	TS	GOLOC +2
0195	REP	9	LAST 1386	01,3746	50 155 0	NDX	TEMP2G
0196	REP	2	LAST 1385	01,3747	3 2000 0	CA	SIZETAB
0197	REP	7	LAST 1385	01,3750	6 0154 1	AD	TEMPPHS
0198	REP	8	LAST 1387	01,3751	6 0154 1	AD	TEMPPHS
0199	REP	9	LAST 1387	01,3752	6 0154 1	AD	TEMPPHS
0200	REP	6	LAST 1387	01,3753	54 156 1	TS	POINTER
0201	REP	1		01,3754	1 3857 1	TCP	CONTRL2
0202	REP	46	LAST 1383	01,3755	3 6214 0	PHSPART2	CA THREE
0203	REP	7	LAST 1387	01,3756	28 156 1	ADS	POINTER
0204	REP	5	LAST 1384	01,3757	3 3557 0	CA	RTNRCADR
0205	REP	30	LAST 1387	01,3760	54 707 0	TS	GOLOC +2
A0206	REP	2	LAST 1387	01,3761	1 3857 1	TCP	CONTRL2
0208	REP	669	LAST 1362	0154		TEMPPHS	EQUALS MPAC
0209	REP	670	LAST 1387	0155		TEMP2G	EQUALS MPAC +1
0210	REP	671	LAST 1387	0156		POINTER	EQUALS MPAC +2
0211	REP	672	LAST 1367	0157		TEMPSWCH	EQUALS MPAC +3
0212	REP	1		0705		GOLOC	EQUALS VAC5 +20D
0213	REP	7	LAST 1364	7715		MINUS2	EQUALS NEG2
0214	REP	9	LAST 1185	6043		OCT177	EQUALS LOW7
0215	REP	1		01,3762	03755 0	PHS2CADR	GENADR PHSPART2
0216	REP	1		01,3763	03533 1	PRT2CADR	GENADR GETPART2
0217	REP	4	LAST 1284	01,3764	05231 1	LGCLCADR	GENADR LONGCALL
0218	REP	32	LAST 1362	01,3765	05042 1	PVACCADR	GENADR FINDVAC
0219	REP	52	LAST 1205	01,3766	05140 1	WILTCADR	GENADR WAITLIST
0220	REP	32	LAST 1372	01,3767	05027 1	NOVACADR	GENADR NOVAC

GET THE DT AND FIND OUT IF IT WAS STORED DIRECTLY OR INDIRECTLY

FIND OUT HOW THE TIME IS STORED

STORE THE CADR

ADD THE PRIORITY AND LET'S GO

SET UP FOR EITHER THE SECOND PART OF THE TABLE, OR A RETURN FOR THE NEXT GROUP

SET UP POINTER FOR OUR LOCATION WITHIN THE TABLE

THIS MAY LOOK BAD BUT LET'S SEE YOU DO BETTER IN TIME OR NUMBERR OF LOCATIONS

NOW PROCESS WHAT IS IN THE TABLE

SET THE POINTER FOR THE SECOND HALF OF THE TABLE

THIS WILL BE OUR LAST TIME THROUGH THE EVEN TABLE, SO AFTER IT GET THE NEXT GROUP

SO LET'S GET THE SECOND ENTRY IN THE TBL



L IMU MODE SWITCHING ROUTINES

USER'S PAGE NO. 1 E0 S4

0001			5410	BLOCK 02
0002	REF 1		4000	SETLOC PPTAG3
0003			5410	BANK
0004	REF 1	E3,1471		EBANK= COMMAND

0005 FIXED-FIXED ROUTINES.

0006 REF 1 COUNT 02/IMODE

0007	REF 254	LAST 1384	5410 3 4714 1	ZEROICDU CAP	ZERO
0008	REF 29	LAST 1333	5411 54 032 1	TS	CDUX
0009	REF 17	LAST 1333	5412 54 033 0	TS	CDUY
0010	REF 23	LAST 1334	5413 54 034 1	TS	CDUZ
0011	REF 319	LAST 1380	5414 0 0002 0	TC	Q
0012	REF 33	LAST 1363	4702	SPSCODE =	81T9

ZERO 1CDU COUNTERS.

L IMU MODE SWITCHING ROUTINES

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P0013 IMU ZEROING ROUTINE.

0014				11,3721		BANK 11		
0015	REF	1		07,2000		SETLOC MODESW		
0016				07,2516		BANK		
0017	REF	1				COUNT 07/IMODE		
0018				07,2516	0 0004 0	IMUZERO	INHINT	ROUTINE TO ZERO ICDUS.
0019	REF	41	LAST 382	07,2517	4 1038 1	CS	DSPTAB +11D	DONT ZERO CDUS IF IMU IN GIMBAL LOCK AND
0020	REF	4	LAST 180	07,2520	7 4728 1	MASK	BITS4d6	COARSE ALIGN (GIMBAL RUNAWAY PROTECTION)
0021	REF	371	LAST 1385	07,2521	10 000 0	CCS	A	
0022	REF	1		07,2522	1 2528 0	TCF	IMUZEROA	
0023	REF	37	LAST 1328	07,2523	0 5537 0	TC	ALARM	IF SO.
0024				07,2524	00208 0	OCT	00208	
0025	REF	1		07,2525	1 3461 0	TCF	CAGETSTJ +4	IMMEDIATE FAILURE.
0032	REF	2	LAST 1389	07,2528	0 3455 0	IMUZEROA	TC	CAGETSTJ
R0033								DO ALL THE WORK.
0034	REF	29	LAST 1034	07,2527	4 1321 1	CS	IMODES33	DISABLE DAP AUTO AND HOLD MODES
0035	REF	2	LAST 526	07,2530	7 4730 0	MASK	SUPER011	BITS FOR GROUND
0036	REF	30	LAST 1389	07,2531	27*321 1	ADS	IMODES33	
0037	REF	43	LAST 721	07,2532	4 1320 0	CS	IMODES30	INHIBIT ICDUPAIL AND IMUPAIL (IN CASE WE
0038	REF	1		07,2533	7 5858 0	MASK	BITS3d4	JUST CAME OUT OF COARSE ALIGN).
0039	REF	44	LAST 1389	07,2534	27*320 0	ADS	IMODES30	
0040	REF	5	LAST 1389	07,2535	4 4728 1	CS	BITS4d6	SEND ZERO ENCODE WITH COARSE AND ERROR
0041				07,2536	0 0008 1	EXTEND		COUNTER DISABLED.
0042	REF	37	LAST 983	07,2537	03 012 1	WAND	CHAN12	
0043	REF	3	LAST 140	07,2540	0 3070 0	TC	NOATTOPF	TURN OFF NO ATT LAMP.
0044	REF	40	LAST 1363	07,2541	3 4708 1	CAP	BITS	
0045				07,2542	0 0008 1	EXTEND		
0046	REF	38	LAST 1389	07,2543	05 012 1	WOR	CHAN12	
00461	REF	3	LAST 140	07,2544	0 5410 1	TC	ZEROICDU	
0047	REF	45	LAST 1363	07,2545	3 4705 1	CAP	BIT6	WAIT 320 MS TO GIVE AGS ADEQUATE TIME TO
0048	REF	53	LAST 1387	07,2548	0 5140 1	TC	WAITLIST	RECEIVE ITS PULSE TRAIN.
0049	REF	5	LAST 183	E3,1474		EBANK=	CDUIND	
0050	REF	1		07,2547	02581 1	ZCADR	IMUZERO2	
0050	REF	1		07,2550	16103 1			
0051	REF	45	LAST 1389	07,2551	4 1320 0	CS	IMODES30	SEE IF IMU OPERATING AND ALARM IF NOT.
0052	REF	34	LAST 1388	07,2552	7 4702 1	MASK	BIT9	
0053	REF	372	LAST 1389	07,2553	10 000 0	CCS	A	
0054	REF	1		07,2554	1 2557 0	TCF	MODEEXIT	



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L IMU MODE SWITCHING ROUTINES

0055	REF	38	LAST 1389	07,2555	0 5537 0				
0056				07,2556	00210 1	TC	ALARM		
						OCT	210		
0057				07,2557	0 0003 1	MODEEXIT	RELINT		
0058	REF	7	LAST 1383	07,2560	1 4570 0	TOP	SWRETURN		
0059	REF	1		07,2561	0 3443 1	IMUZERO2	TC	CAGETEST	
0061	REF	4	LAST 1389	07,2562	0 5410 1	TC	ZEROICDU		
0062	REF	41	LAST 1389	07,2563	4 4708 0	CS	BITS		
0063				07,2564	0 0006 1	EXTEND			
0064	REF	39	LAST 1389	07,2565	03 012 1	WAND	CHAN12		
0065	REF	38	LAST 1383	07,2566	3 4700 1	CAP	BIT11		
0066	REF	4	LAST 159	07,2567	0 5161 1	TC	VARDELAY		
0067	REF	2	LAST 1390	07,2570	0 3443 1	IMUZERO3	TC	CAGETEST	
0069	REF	2	LAST 1389	07,2571	4 5656 0	CS	BITS344		
0070	REF	46	LAST 1389	07,2572	7 1320 0	MASK	IMODES30		
0071	REF	47	LAST 1390	07,2573	55=320 0	TS	IMODES30		
0072	REF	3	LAST 1389	07,2574	4 4730 0	CS	SUPER011		
0073	REF	31	LAST 1389	07,2575	7 1321 1	MASK	IMODES33		
0074	REF	32	LAST 1390	07,2576	55=321 1	TS	IMODES33		
0075	REF	39	LAST 1080	07,2577	0 4633 0	TC	IRKCALL		
0076	REF	5	LAST 154	07,2600	14665 1	CADR	SETISSW		
0077	REF	1		07,2601	1 3433 1	TOP	ENDIMU		

GENERAL MODE-SWITCHING EXIT.

ZERO CDUX, CDUY, CDUZ

REMOVE ZERO DISCRETE.

WAIT 10 SECS FOR CTRS TO FIND GIMBALS

REMOVE IMUFAIL AND ICDUFail INHIBIT.

ENABLE DAP AUTO AND HOLD MODES
BITS FOR GROUND

SET ISS WARNING IF EITHER OF ABOVE ARE
PRESENT.



L IMU MODE SWITCHING ROUTINES

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P0078 IMU COARSE ALIGN MODE.

0079				07,2602	0 0004 0	IMUCOARS	INHINT	
0080	RESP	3	LAST 1389	07,2603	0 3455 0	TC	CAGETSTJ	
0081	RESP	3	LAST 183	07,2604	0 2746 0	TC	SETCOARS	
0082	RESP	41	LAST 1364	07,2605	3 6211 0	CAP	SIX	
0083	RESP	54	LAST 1389	07,2606	0 5140 1	TC	WAITLIST	
0084	RESP	6	LAST 1369	E3,1474		EBANK=	CDUIND	
0085	RESP	1		07,2607	02612 0	2CADR	COARS	
0085	RESP	1		07,2610	16103 1			
0086	RESP	2	LAST 1389	07,2611	1 2557 0	TCP	MODEEXIT	
0087	RESP	3	LAST 1390	07,2612	0 3443 1	COARS	TC	CAGETEST
0088	RESP	46	LAST 1369	07,2613	3 4705 1	CAP	BITS	
0089				07,2614	0 0006 1	EXTEND		
0090	RESP	40	LAST 1390	07,2615	05 012 1	WOR	CHAN12	
0091	RESP	69	LAST 1379	07,2616	3 4711 1	CAP	TWO	
0092	RESP	7	LAST 1391	07,2617	55=474 0	COARS1	TS	CDUIND
0093	RESP	8	LAST 1391	07,2620	51=474 1	INDEX	CDUIND	
0094	RESP	21	LAST 1328	07,2621	3 1155 1	CA	THETAD	
0095				07,2622	0 0006 1	EXTEND		
0096	RESP	9	LAST 1391	07,2623	5 1474 1	INDEX	CDUIND	
0097	RESP	30	LAST 1368	07,2624	20 032 1	MSU	CDUX	
0098				07,2625	0 0006 1	EXTEND		
0099	RESP	45	LAST 1363	07,2626	7 4676 0	MP	BIT13	
0100	RESP	223	LAST 1364	07,2627	56 001 0	XCH	L	
0101				07,2630	6 0000 1	DOUBLE		
0102	RESP	14	LAST 1379	07,2631	54 061 1	TS	ITEMP1	
0103				07,2632	1 2634 0	TCP	+2	
0104	RESP	224	LAST 1391	07,2633	28 001 1	ADS	L	
0105	RESP	10	LAST 1391	07,2634	51=474 1	INDEX	CDUIND	
0106	RESP	2	LAST 1366	07,2635	23=471 1	LXCH	COMMAND	
0107	RESP	11	LAST 1391	07,2636	11=474 0	CCS	CDUIND	
0108	RESP	1		07,2637	0 2617 0	TC	COARS1	
0109	RESP	70	LAST 1391	07,2640	3 4711 1	CAP	TWO	
0110	RESP	5	LAST 1390	07,2641	0 5161 1	TC	VARDELAY	

ENABLE ALL THREE ISS CDU ERROR COUNTERS

SET CDU INDICATOR

COMPUTE THETAD - THETAA IN 1'S
COMPLEMENT FORMSHIFT RIGHT 2
ROUND

DIFFERENCE TO BE COMPUTED

MINIMUM OF 4 MS WAIT



L IMU MODE SWITCHING ROUTINES

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0111	REP	4	LAST 1391	07,2642	0 3443 1	COARS2	TC	CAGESTEST
0112	REP	15	LAST 1391	07,2643	54 061 1		TS	ITEMP1
0113	REP	71	LAST 1391	07,2644	3 4711 1		CAP	TWO
0114	REP	12	LAST 1391	07,2645	55=474 0	+3	TS	CDUIND
0115	REP	13	LAST 1392	07,2646	51=474 1		INDEX	CDUIND
0116	REP	3	LAST 1391	07,2647	11=471 0		CCS	COMMAND
0117	REP	1		07,2650	0 2854 1		TC	COMPOS
0118	REP	1		07,2651	0 2863 0		TC	NEXTCDU +1
0119	REP	1		07,2652	0 2721 1		TC	COMNEG
0120	REP	2	LAST 1392	07,2653	0 2863 0		TC	NEXTCDU +1
0121	REP	1		07,2654	6 3544 1	COMPOS	AD	-COMMAX
0122				07,2655	0 0008 1		EXTEND	
0123	REP	1		07,2656	6 2731 0		BZMP	COMZERO
0124	REP	14	LAST 1392	07,2657	51=474 1		INDEX	CDUIND
0125	REP	4	LAST 1392	07,2660	55=471 0		TS	COMMAND
0126	REP	1		07,2661	4 3545 1		CS	-COMMAX-
0127	REP	16	LAST 1392	07,2662	24 061 0	NEXTCDU	INCR	ITEMP1
0128	REP	16	LAST 1384	07,2663	6 4713 0		AD	NEG0
0129	REP	15	LAST 1392	07,2664	51=474 1		INDEX	CDUIND
0130	REP	4	LAST 963	07,2665	54 050 0		TS	CDUXCMD
0131	REP	16	LAST 1392	07,2666	11=474 0		CCS	CDUIND
0132	REP	1		07,2667	0 2645 1		TC	COARS2 +3
0133	REP	17	LAST 1392	07,2670	10 061 1		CCS	ITEMP1
0134	REP	1		07,2671	1 2735 0		TCP	SENDPULS
0135	REP	13	LAST 781	07,2672	0 5156 0		TC	FIXDELAY
0136				07,2673	00226 1		DEC	150
0137	REP	72	LAST 1392	07,2674	3 4711 1		CAP	TWO
0138	REP	18	LAST 1392	07,2675	54 061 1	CHKCORS	TS	ITEMP1
0139	REP	373	LAST 1389	07,2676	50 000 1		INDEX	A
0140	REP	31	LAST 1391	07,2677	3 0032 0		CA	CDUX
0141				07,2700	0 0008 1		EXTEND	
0142	REP	19	LAST 1392	07,2701	5 0061 0		INDEX	ITEMP1
0143	REP	22	LAST 1391	07,2702	21=155 0		MSJ	THETAD
0144	REP	374	LAST 1392	07,2703	10 000 0		CCS	A
0145	REP	1		07,2704	1 2712 0		TCP	COARSERR
0146	REP	1		07,2705	1 2707 1		TCP	CORSQK2
0147	REP	2	LAST 1392	07,2706	1 2712 0		TCP	COARSERR

DONT CONTINUE IF CAGED.
SETS TO +0.
SET CDU INDICATOR

NUMBER OF PULSES REQUIRED
GREATER THAN MAX ALLOWED

COMMAX = MAX NUMBER OF PULSES ALLOWED
MINUS ONE

REDUCE COMMAND BY MAX NUMBER OF PULSES
ALLOWED

SET UP COMMAND REGISTER.

SEE IF ANY PULSES TO GO OUT.

WAIT FOR GIMBALS TO SETTLE.

AT END OF COMMAND, CHECK TO SEE THAT
GIMBALS ARE WITHIN 2 DEGREES OF THETAD.



L IMU MODE SWITCHING ROUTINES

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0148	REP	20	LAST 1392	07,2707	10 081 1	CORSCHK2	CCS	ITEMP1
0149	REP	1		07,2710	1 2875 0		TCP	CHKCORS
0150	REP	2	LAST 1390	07,2711	1 3433 1		TCP	ENDIMU
0151	REP	1		07,2712	6 2720 0	COARSEERR	AD	COARSTOL
0152				07,2713	0 0008 1		EXTEND	
0153	REP	2	LAST 1392	07,2714	6 2707 0		BZMP	CORSCHK2
0154	REP	39	LAST 1390	07,2715	0 5537 0		TC	ALARM
0155				07,2716	00211 0		OCT	211
0156	REP	2	LAST 139	07,2717	1 3441 1		TCP	IMUBAD
0157				07,2720	77511 1	COARSTOL	DEC	-.01111
0158	REP	2	LAST 1392	07,2721	6 3544 1	CONNEG	AD	-COMMAX
0159				07,2722	0 0008 1		EXTEND	
0160	REP	2	LAST 1392	07,2723	6 2731 0		BZMP	COMZERO
0161				07,2724	4 0000 0		COM	
0162	REP	17	LAST 1392	07,2725	51=474 1		INDEX	CDUIND
0163	REP	5	LAST 1392	07,2726	55=471 0		TS	COMMAND
0164	REP	2	LAST 1392	07,2727	3 3545 0		CA	-COMMAX-
0165	REP	3	LAST 1392	07,2730	0 2882 1		TC	NEXTCDU
0166	REP	255	LAST 1388	07,2731	3 4714 1	COMZERO	CAP	ZERO
0167	REP	18	LAST 1393	07,2732	51=474 1		INDEX	CDUIND
0168	REP	6	LAST 1393	07,2733	57=471 1		XCH	COMMAND
0169	REP	4	LAST 1393	07,2734	0 2882 1		TC	NEXTCDU
0170	REP	6	LAST 1037	07,2735	3 7707 0	SENDPULS	CAP	13,14,15
0171				07,2736	0 0008 1		EXTEND	
0172	REP	12	LAST 983	07,2737	05 014 1		WOR	CHAN14
0173	REP	1		07,2740	3 3548 0		CAP	600MS
0174	REP	2	LAST 1392	07,2741	1 2641 1		TCP	COARS2 -1
0175	REP	47	LAST 1391	07,2742	3 4705 1	CA+ECE	CAP	BIT8
0176				07,2743	0 0008 1		EXTEND	
0177	REP	41	LAST 1391	07,2744	05 012 1		WOR	CHAN12
0178	REP	65	LAST 1283	07,2745	0 5213 1		TC	TASKOVER

END OF COARSE ALIGNMENT.

2 DEGREES.

COARSE ALIGN ERROR.

2 DEGREES SCALED AT HALF-REVOLUTIONS

THEN TO VARDELAY
ENABLE ALL THREE ISS CDU ERROR COUNTERS



L IMU MODE SWITCHING ROUTINES

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0170	REF	41	LAST 1363	07,2746	3 4707 0	SETCOARS CAP	BIT4	
0180				07,2747	0 0008 1	EXTEND		
0181	REF	42	LAST 1393	07,2750	02 012 0	RAND	CHAN12	
0182	REF	375	LAST 1392	07,2751	10 000 0	CCS	A	
0183	REF	320	LAST 1388	07,2752	0 0002 0	TC	0	
0184	REF	48	LAST 1393	07,2753	4 4705 0	CS	BIT6	
0185				07,2754	0 0008 1	EXTEND		
0186	REF	43	LAST 1394	07,2755	03 012 1	WAND	CHAN12	CLEAR ISS ERROR COUNTERS
0187	REF	39	LAST 1385	07,2756	4 4701 1	CS	BIT10	
0188				07,2757	0 0008 1	EXTEND		
0189	REF	13	LAST 1393	07,2760	03 014 1	WAND	CHAN14	KNOCK DOWN GYRO ACTIVITY
0190	REF	256	LAST 1393	07,2761	4 4714 0	CS	ZERO	
0191	REF	2	LAST 148	07,2762	54 047 0	TS	GYROOND	
0192	REF	42	LAST 1394	07,2763	3 4707 0	CAP	BIT4	
0193				07,2764	0 0008 1	EXTEND		
0194	REF	44	LAST 1394	07,2765	05 012 1	WOR	CHAN12	PUT ISS IN COARSE ALIGN
0195	REF	42	LAST 1389	07,2766	4 1036 1	CS	DSPTAB +11D	
0196	REF	1		07,2767	7 3011 0	MASK	OCT40010	TURN ON NO ATT LAMP
0197	REF	43	LAST 1394	07,2770	27-036 1	ADS	DSPTAB +11D	
0198	REF	33	LAST 1390	07,2771	4 1321 1	CS	IMODES33	
0199	REF	49	LAST 1394	07,2772	7 4705 0	MASK	BIT6	DISABLE DAP AUTO AND HOLD MODES
0200	REF	34	LAST 1394	07,2773	27-321 1	ADS	IMODES33	
0201	REF	48	LAST 1390	07,2774	4 1320 0	CS	IMODES30	
0202	REF	43	LAST 1394	07,2775	7 4707 1	MASK	BIT4	DISABLE IMUPAIL
0203	REF	49	LAST 1394	07,2776	27-320 0	ADS	IMODES30	
0204	REF	42	LAST 1390	07,2777	4 4706 0	RNDREFDR CS	BIT5	
0205	REF	24	LAST 989	07,3000	7 0075 1	MASK	FLAGWRD1	KNOCK DOWN TRACK FLAG
0206	REF	25	LAST 1394	07,3001	54 075 1	TS	FLAGWRD1	
0207	REF	51	LAST 1377	07,3002	4 4874 1	CS	BIT15	
0208	REF	19	LAST 1195	07,3003	7 0076 1	MASK	FLAGWRD2	KNOCK DOWN DRIPT FLAG
0209	REF	20	LAST 1394	07,3004	54 076 1	TS	FLAGWRD2	
0210	REF	46	LAST 1391	07,3005	4 4876 0	CS	BIT13	
0211	REF	2	LAST 417	07,3006	7 0077 0	MASK	FLAGWRD3	KNOCK DOWN REFS-MAT FLAG
0212	REF	3	LAST 1394	07,3007	54 077 0	TS	FLAGWRD3	
0213	REF	321	LAST 1394	07,3010	0 0002 0	TC	0	
0214				07,3011	40010 1	OCT40010	OCT	40010

L IMU MODE SWITCHING ROUTINES

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P0215 IMU FINE ALIGN MODE SWITCH.

0216				07,3012	0 0004 0	IMUPINE	INHINT	
0217	REF	4	LAST 1391	07,3013	0 3455 0		TC	CAGETSTJ
0218	REF	1		07,3014	4 3543 1		CS	BITS4-5
0219				07,3015	0 0006 1		EXTEND	
0220	REF	45	LAST 1394	07,3016	03 012 1		WAND	CHAN12
0221	REF	50	LAST 1394	07,3017	4 4705 0		CS	BIT8
0222	REF	35	LAST 1394	07,3020	7 1321 1		MASK	IMODES33
0223	REF	38	LAST 1395	07,3021	55=321 1		TS	IMODES33
0224	REF	4	LAST 1389	07,3022	0 3070 0		TC	NOATTOPF
0225	REF	40	LAST 1394	07,3023	3 4701 0		CAP	BIT10
0226	REF	55	LAST 1391	07,3024	0 5140 1		TC	WAITLIST
0227	REF	19	LAST 1393	E3,1474			EBANK=	CDUIND
0228	REF	1		07,3025	03038 1		2CADR	IPAILQK
0228	REF	1		07,3026	16103 1			
0229	REF	5	LAST 779	07,3027	3 4735 1		CAP	2SECS
0230	REF	56	LAST 1395	07,3030	0 5140 1		TC	WAITLIST
0231	REF	20	LAST 1395	E3,1474			EBANK=	CDUIND
0232	REF	1		07,3031	03034 0		2CADR	IMUPINED
0232	REF	1		07,3032	16103 1			
0233	REF	3	LAST 1391	07,3033	1 2557 0		TCF	MODEEXIT
0234	REF	5	LAST 1392	07,3034	0 3443 1	IMUPINED	TC	CAGETEST
0235	REF	3	LAST 1393	07,3035	1 3433 1		TCF	ENDIMU

SEE IF IMU BEING CAGED.

RESET ZERO AND COARSE

INSURE DAP AUTO AND HOLD MODES ENABLED

IMU FAIL WAS INHIBITED DURING THE
PRESUMABLY PRECEDING COARSE ALIGN. LEAVE

IT ON FOR THE FIRST 5 SECS OF FINE ALIGN

SEE THAT NO ONE HAS CAGED THE IMU.

L IMU MODE SWITCHING ROUTINES

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0236	REP	1		07,3038	0 3450 0	IPAILQK	TC	CAGETSTO
0237	REP	66	LAST 1393	07,3037	1 5213 0		TCP	TASKOVER
0238	REP	44	LAST 1394	07,3040	3 4707 0		CAP	BIT4
0239				07,3041	0 0006 1		EXTEND	
0240	REP	46	LAST 1395	07,3042	02 012 0		RAND	CHAN12
0241	REP	376	LAST 1394	07,3043	10 000 0		CCS	A
0242	REP	67	LAST 1396	07,3044	1 5213 0		TCP	TASKOVER
0243	REP	50	LAST 1394	07,3045	4 1320 0		CS	IMODES30
0244	REP	47	LAST 1394	07,3046	7 4676 0		MASK	BIT13
0245	REP	51	LAST 1396	07,3047	27=320 0		ADS	IMODES30
0246	REP	45	LAST 1396	07,3050	4 4707 1		CS	BIT4
0247	REP	52	LAST 1396	07,3051	7 1320 0	PPAILQK2	MASK	IMODES30
0248	REP	53	LAST 1396	07,3052	55=320 0		TS	IMODES30
0249	REP	40	LAST 1390	07,3053	0 4633 0		TC	IBNKCALL
0250	REP	6	LAST 1390	07,3054	14665 1		CADR	SETISSW
0251	REP	68	LAST 1396	07,3055	1 5213 0		TCP	TASKOVER
0252	REP	2	LAST 1396	07,3056	0 3450 0	PPAILQK	TC	CAGETSTO
0253	REP	69	LAST 1396	07,3057	1 5213 0		TCP	TASKOVER
0254	REP	54	LAST 1396	07,3060	4 1320 0		CS	IMODES30
0255	REP	41	LAST 1395	07,3061	7 4701 1		MASK	BIT10
0256	REP	55	LAST 1396	07,3062	27=320 0		ADS	IMODES30
0257	REP	37	LAST 1395	07,3063	4 1321 1		CS	IMODES33
0258	REP	48	LAST 1396	07,3064	7 4676 0		MASK	BIT13
0259	REP	38	LAST 1396	07,3065	27=321 1		ADS	IMODES33
0260	REP	43	LAST 1394	07,3066	4 4706 0		CS	BITS
0261	REP	1		07,3067	1 3051 1		TCP	PPAILQK2
0262	REP	2	LAST 1394	07,3070	4 3011 0	NOATTOPF	CS	OCT40010
0263	REP	44	LAST 1394	07,3071	7 1036 1		MASK	DSPTAB +11D
0264	REP	52	LAST 1394	07,3072	6 4674 0		AD	BIT15
0265	REP	45	LAST 1396	07,3073	55=036 1		TS	DSPTAB +11D
0266	REP	322	LAST 1394	07,3074	0 0002 0		TC	0

ENABLE IMU FIAL UNLESS IMU BEING CAGED.
IT IS.

DONT RESET IMU FAIL INHIBIT IF SOMEONE
HAS GONE INTO COARSE ALIGN.

RESET IMUFAIL.

THE ISS WARNING LIGHT MAY COME ON NOW
THAT THE INHIBIT HAS BEEN REMOVED.

ENABLE PIP FAIL PROG ALARM.

RESET IMU AND PIPA FAIL BITS.

SUBROUTINE TO TURN OFF NO ATT LAMP.



L IMU MODE SWITCHING ROUTINES

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P0287 ROUTINES TO INITIATE AND TERMINATE PROGRAM USE OF THE PIPAS. NO IMUSTALL REQUIRED IN EITHER CASE.

0272	REP	257	LAST	1394	07,3075	4 4714 0	PIPUSE	CS	ZERO
0273	REP	12	LAST	788	07,3076	54 037 1		TS	PIPAX
0274	REP	3	LAST	430	07,3077	54 040 1		TS	PIPAY
0275	REP	6	LAST	788	07,3100	54 041 0		TS	PIPAZ
02752	REP	3	LAST	1396	07,3101	0 3450 0	PIPUSE1	TC	CAOETSTO
02754	REP	8	LAST	1390	07,3102	1 4570 0		TCP	SWRETURN
02756					07,3103	0 0004 0		INHINT	
0276	REP	78	LAST	1383	07,3104	4 4712 0		CS	BIT1
0277	REP	56	LAST	1396	07,3105	7 1320 0		MASK	IMODES30
0278	REP	57	LAST	1397	07,3106	55 320 0		TS	IMODES30
0279	REP	41	LAST	1396	07,3107	0 4633 0	PIPPRE22	TC	IBNKCALL
0280	REP	7	LAST	1396	07,3110	14665 1		CADR	SETISSW
0281	REP	4	LAST	1395	07,3111	1 2557 0		TCP	MODEEXIT
0282					07,3112	0 0004 0	PIPPRE22	INHINT	
0283	REP	58	LAST	1397	07,3113	4 1320 0		CS	IMODES30
0284	REP	79	LAST	1397	07,3114	7 4712 0		MASK	BIT1
0285	REP	59	LAST	1397	07,3115	27 320 0		ADS	IMODES30
0286	REP	42	LAST	1396	07,3116	7 4701 1		MASK	BIT10
0287	REP	377	LAST	1396	07,3117	10 000 0		CCS	A
0288	REP	5	LAST	1397	07,3120	1 2557 0		TCP	MODEEXIT
0289	REP	40	LAST	1393	07,3121	0 5537 0		TC	ALARM
0290					07,3122	00212 0		OCT	212
0291					07,3123	0 0004 0		INHINT	
0292	REP	1			07,3124	1 3107 0		TCP	PIPPRE22

DO NOT ENABLE PIPA FAIL IF IMU IS CAGED

IF PIPA FAILS FROM NOW ON (UNTIL PIPPRE2), LIGHT ISS WARNING.

ISS WARNING MIGHT COME ON NOW.
(OR GO OFF ON PIPPRE2).PROGRAM DONE WITH PIPAS. DONT LIGHT
ISS WARNING.IF PIP FAIL ON, DO PROG ALARM AND RESET
ISS WARNING.



L IMU MODE SWITCHING ROUTINES

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P0293 THE FOLLOWING ROUTINE TORQUES THE IRIGS ACCORDING TO DOUBLE PRECISION INPUTS IN THE SIX REGISTERS
R0295 BEGINNING AT THE ECADR ARRIVING IN A. THE MINIMUM SIZE OF ANY PULSE TRAIN IS 16 PULSES (.25 CDU COUNTS). THE
R0297 UNSENT PORTION OF THE COMMAND IS LEFT INTACT IN THE INPUT COMMAND REGISTERS.

0299		E3,1400		EBANK= 1400		VARIABLE, ACTUALLY.	
0300	REP 673 LAST 1367	07,3125	54 161 0	IMPULSE TS	MPAC +5	SAVE ARRIVING ECADR.	
0301	REP 5 LAST 1395	07,3126	0 3455 0	TC	CAGETSTJ	DONT PROCEED IF IMU BEING CAGED.	
0302	REP 3 LAST 437	07,3127	11=304 0	CCS	LOGYRO	SEE IF GYROS BUSY.	
0303	REP 1	07,3130	0 3171 0	TC	GYROBUSY	SLEEP.	
0304	REP 674 LAST 1396	07,3131	54 156 1	TS	MPAC +2		
0305	REP 51 LAST 1395	07,3132	3 4705 1	CAP	BIT6	ENABLE THE POWER SUPPLY.	
0306		07,3133	0 0006 1	EXTEND			
0307	REP 14 LAST 1394	07,3134	05 014 1	WOR	CHAN14		
0308	REP 20 LAST 1363	07,3135	3 4710 0	CAP	POUR		
0310	REP 57 LAST 1395	07,3136	0 5140 1	TC	WAITLIST	(IF A JOB WAS PUT TO SLEEP, THE POWER	
0311	REP 21 LAST 1395	E3,1474		EBANK=	CDUIND	SUPPLY IS LEFT ON BY THE WAKING JOB).	
0312	REP 1	07,3137	03207 1	2CADR	STRTOYRO		
0312	REP 1	07,3140	16103 1				
0313	REP 675 LAST 1396	07,3141	3 0161 1	CA	MPAC +5	SET UP EBANK, SAVING CALLER'S EBANK FOR	
0314	REP 56 LAST 1367	07,3142	58 003 1	XCH	EBANK	RESTORATION ON RETURN.	
0315	REP 676 LAST 1396	07,3143	56 161 1	XCH	MPAC +5		
0316	REP 4 LAST 1398	07,3144	55=304 0	TS	LOGYRO	RESERVES GYROS.	
0317	REP 14 LAST 1364	07,3145	7 4373 0	MASK	LOW6		
0318	REP 21 LAST 1393	07,3146	54 061 1	TS	ITEMP1		
0319	REP 73 LAST 1392	07,3147	3 4711 1	CAP	TWO	FORCE SIGN AGREEMENT ON INPUTS.	
0320	REP 677 LAST 1398	07,3150	54 157 0	GYROAGRE TS	MPAC +3		
0321		07,3151	6 0000 1	DOUBLE			
0322	REP 22 LAST 1398	07,3152	6 0081 0	AD	ITEMP1		
0323	REP 678 LAST 1396	07,3153	54 160 1	TS	MPAC +4		
0324		07,3154	0 0008 1	EXTEND			
0325	REP 378 LAST 1397	07,3155	5 0000 1	INDEX	A		
0326		07,3156	3 1401 0	DCA	1400		
0327	REP 679 LAST 1396	07,3157	52 155 1	DXCH	MPAC		
0328	REP 11 LAST 1299	07,3160	0 7226 0	TC	TPAGREE		
0329	REP 680 LAST 1396	07,3161	52 155 1	DXCH	MPAC		
0330	REP 661 LAST 1398	07,3162	50 160 0	INDEX	MPAC +4		
0331		07,3163	53=401 1	DXCH	1400		
0332	REP 662 LAST 1396	07,3164	10 157 0	CCS	MPAC +3		
0333	REP 1	07,3165	1 3150 1	TCF	GYROAGRE		
0334	REP 683 LAST 1396	07,3166	3 0161 1	CA	MPAC +5	RESTORE CALLER'S EBANK.	
0335	REP 59 LAST 1398	07,3167	54 003 0	TS	EBANK		
0336	REP 6 LAST 1397	07,3170	1 2557 0	TCF	MODEEXIT		



L IMU MODE SWITCHING ROUTINES

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P0337 ROUTINES TO ALLOW TORQUING BY ONLY ONE JOB AT A TIME.

0338				07,3171	0 0006 1	GYROBUSY	EXTEND		
0339	REF	20	LAST 1160	07,3172	3 0134 1	DCA	BUF2		
0340	REF	684	LAST 1398	07,3173	52 155 1	DXCH	MPAC		
0341	REF	1		07,3174	3 3208 0	REGSLEEP	CAP	LOWAKE	
0342	REF	5	LAST 1294	07,3175	1 5070 1	TCF	JOB SLEEP		
0343	REF	5	LAST 1398	07,3176	11=304 0	OWAKE	CCS	LOWRO	
0344	REF	1		07,3177	1 3174 1	TCF	REGSLEEP		
0345	REF	685	LAST 1399	07,3200	54 156 1	TS	MPAC +2		
0346				07,3201	0 0008 1	EXTEND			
0347	REF	686	LAST 1399	07,3202	3 0155 0	DCA	MPAC		
0348	REF	21	LAST 1399	07,3203	52 134 0	DXCH	BUF2		
0349	REF	160	LAST 1384	07,3204	3 4712 1	CAP	ONE		
0350	REF	1		07,3205	1 3138 1	TCF	OWAKE2		
0351	REF	1		07,3206	17176 1	LOWAKE	CADR	OWAKE	

SAVE RETURN 2PCADR.

WHEN AWAKENED, SEE IF GYROS STILL BUSY.
IF SO, SLEEP SOME MORE.

RESTORE SWRETURN INFO.



L IMU MODE SWITCHING ROUTINES

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P0352 GYRO-TORQUING WAITLIST TASKS.

0353	REP	1		07,3207	4 3430 1	STRTOYRO CS	GDESELECT	DE-SELECT LAST GYRO.
0354				07,3210	0 0008 1	EXTEND		
0355	REP	15	LAST 1398	07,3211	03 014 1	WAND	CHAN14	
0356	REP	6	LAST 1395	07,3212	0 3443 1	TC	CAGETEST	
0357	REP	6	LAST 1399	07,3213	3 1304 1	STRTOYR2 CA	LGYRO	JUMP ON PHASE COUNTER IN BITS 13-14.
0358				07,3214	0 0008 1	EXTEND		
0359	REP	46	LAST 1396	07,3215	7 4707 1	MP	BIT4	
0360	REP	379	LAST 1398	07,3216	50 000 1	INDEX	A	
0361				07,3217	1 3220 0	TCF	+1	
0362	REP	1		07,3220	0 3235 0	TC	GSELECT	=0. DO Y GYRO.
0363				07,3221	00202 1	OCT	00202	
0364	REP	2	LAST 1400	07,3222	0 3235 0	TC	GSELECT	=1. DO Z GYRO.
0365				07,3223	00302 0	OCT	00302	
0366	REP	3	LAST 1400	07,3224	0 3233 0	TC	GSELECT -2	=2. DO X GYRO.
0367				07,3225	00100 0	OCT	00100	
0368	REP	258	LAST 1397	07,3226	3 4714 1	CAP	ZERO	=3. DONE
0369	REP	7	LAST 1400	07,3227	55=304 0	TS	LGYRO	
0370	REP	2	LAST 1399	07,3230	3 3206 0	CAP	LGWAKE	WAKE A POSSIBLE SLEEPING JOB.
0371	REP	6	LAST 1294	07,3231	0 5074 1	TC	JOBWAKE	
0372	REP	2	LAST 1395	07,3232	1 3034 1	NORESET TCF	IMUPINED	DO NOT RESET POWER SUPPLY

L IMU MODE SWITCHING ROUTINES

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0373	REF	21	LAST 1398	07,3233	4 4710 1	-2	CS	FOUR
0374	REF	8	LAST 1400	07,3234	27*304 0		ADS	LOYRO
0375	REF	323	LAST 1398	07,3235	50 002 0	GSELECT	INDEX	Q
0376				07,3236	3 0000 1		CAP	0
0377	REF	4	LAST 1379	07,3237	54 084 1		TS	ITEMP4
0378	REF	20	LAST 1371	07,3240	7 4716 1		MASK	SEVEN
0379	REF	49	LAST 1396	07,3241	6 4876 1		AD	BIT13
0380	REF	9	LAST 1401	07,3242	27*304 0		ADS	LOYRO
0381	REF	60	LAST 1398	07,3243	54 003 0		TS	EBANK
0382	REF	15	LAST 1398	07,3244	7 4373 0		MASK	LOW8
0383	REF	23	LAST 1398	07,3245	54 081 1		TS	ITEMP1
0384	REF	21	LAST 1401	07,3246	4 4716 1		CS	SEVEN
0385	REF	5	LAST 1401	07,3247	7 0084 1		MASK	ITEMP4
0386	REF	6	LAST 1401	07,3250	54 084 1		TS	ITEMP4
0387				07,3251	0 0006 1	EXTEND		
0388	REF	24	LAST 1401	07,3252	5 0081 0	INDEX	ITEMP1	
0389				07,3253	3 1401 0	DCA	1400	
0390	REF	28	LAST 1379	07,3254	52 071 0	DxCH	RUPTRG1	
0391	REF	29	LAST 1401	07,3255	10 070 1	CCS	RUPTRG1	
0392	REF	1		07,3256	1 3271 1	TCP	MAJ+	
0393				07,3257	1 3281 0	TCP	+2	
0394	REF	1		07,3260	1 3411 1	TCP	MAJ-	
0395	REF	7	LAST 1379	07,3261	10 071 0	CCS	RUPTRG2	
0396	REF	1		07,3262	1 3266 1	TCP	MIN+	
0397	REF	1		07,3263	1 3213 0	TCP	STRIGYR2	
0398	REF	1		07,3264	1 3406 1	TCP	MIN-	
0399	REF	2	LAST 1401	07,3265	1 3213 0	TCP	STRIGYR2	

SPECIAL ENTRY TO REGRESS LOYRO FOR X.

SELECT GYRO.
PACKED WORD CONTAINS GYRO SELECT BITS
AND INCREMENT TO LOYRO.

MOVE DP COMMAND TO RUPTRG3 FOR TESTING.



L IMU MODE SWITCHING ROUTINES

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0400	REP	1		07,3266	6 3322 1	MIN+	AD	-GYROMIN
0401				07,3267	0 0006 1		EXTEND	
0402	REP	3	LAST 1401	07,3270	6 3213 1		BZMP	STRTGYR2
0403				07,3271	0 0006 1	MAJ+	EXTEND	
0404	REP	1		07,3272	3 3432 1		DCA	GYROPRAC
0405	REP	30	LAST 1401	07,3273	20 071 0		DAS	RUPTRG1
0406	REP	7	LAST 1401	07,3274	3 0084 0		CA	ITEMP4
0407				07,3275	0 0006 1		EXTEND	
0408	REP	16	LAST 1400	07,3276	05 014 1		WOR	CHAN14
0409	REP	10	LAST 1387	07,3277	3 6043 0		CAP	LOW7
0410	REP	6	LAST 1401	07,3300	7 0071 0		MASK	RUPTRG2
0411	REP	9	LAST 1402	07,3301	56 071 1		XCH	RUPTRG2
0412				07,3302	0 0006 1	EMERGE	EXTEND	
0413	REP	30	LAST 1376	07,3303	7 4703 0		MP	BIT8
0414	REP	17	LAST 1379	07,3304	54 062 1		TS	ITEMP2
0415	REP	31	LAST 1402	07,3305	3 0070 0		CA	RUPTRG1
0416				07,3306	0 0006 1		EXTEND	
0417	REP	35	LAST 1369	07,3307	7 4702 1		MP	BIT9
0418	REP	32	LAST 1402	07,3310	54 070 1		TS	RUPTRG1
0419	REP	225	LAST 1391	07,3311	3 0001 0		CA	L
0420				07,3312	0 0006 1		EXTEND	
0421	REP	76	LAST 1363	07,3313	7 4675 0		MP	BIT14
0422	REP	18	LAST 1402	07,3314	26 062 1		ADS	ITEMP2
0423				07,3315	0 0006 1		EXTEND	
0424	REP	33	LAST 1402	07,3316	3 0071 1		DCA	RUPTRG1
0425	REP	1		07,3317	6 7716 0		AD	MINUS1
0426	REP	380	LAST 1400	07,3320	10 000 0		CCS	A
0427	REP	1		07,3321	1 3345 1		TCF	LONGGYRO
0428				07,3322	77601 0	-GYROMIN	OCT	-176
0429				07,3323	1 3327 0		TCF	+4
0430	REP	77	LAST 1402	07,3324	3 4675 1		CAP	BIT14
0431	REP	19	LAST 1402	07,3325	26 062 1		ADS	ITEMP2
0432	REP	259	LAST 1400	07,3326	3 4714 1		CAP	ZERO
0433	REP	25	LAST 1401	07,3327	50 061 0	+4	INDEX	ITEMP1
0434				07,3330	53-401 1		DXCH	1400

SMALL POSITIVE COMMAND. SEE IF AT LEAST 16 GYRO PULSES.

DEFINITE POSITIVE OUTPUT.

SELECT POSITIVE TORQUING FOR THIS GYRO.

LEAVE NUMBER OF POSSIBLE 6192 AUGMENTS TO INITIAL COMMAND IN MAJOR PART OF LONG TERM STORAGE AND TRUNCATED FRACTION IN MINOR PART. THE MAJOR PART WILL BE COUNTED DOWN TO ZERO IN THE COURSE OF PUTTING OUT THE ENTIRE COMMAND.

INITIAL COMMAND.

SEE IF MORE THAN ONE PULSE TRAIN NEEDED (MORE THAN 16363 PULSES).

MAY BE ADJUSTED TO SPECIFY MINIMUM CMD



L INU MODE SWITCHING ROUTINES

0435	REP	20	LAST 1402	07,3331	3 0062 0	LASTSEG	CA	ITEMP2	
0436	REP	3	LAST 1394	07,3332	54 047 0		TS	GYROCMD	
0437				07,3333	0 0008 1		EXTEND		
0438	REP	43	LAST 1397	07,3334	7 4701 1		MP	BIT10	
0439	REP	47	LAST 1387	07,3335	6 6214 0		AD	THREE	
0440	REP	58	LAST 1398	07,3336	0 5140 1		TC	WAITLIST	
0441	REP	22	LAST 1396	E3,1474			EBANK	CDUIND	
0442	REP	2	LAST 1396	07,3337	03207 1		ZCADR	STRTOYRO	
0442				07,3340	16103 1				
0446	REP	44	LAST 1403	07,3341	3 4701 0	GYROEXIT	CAP	BIT10	
0449				07,3342	0 0008 1		EXTEND		
0450	REP	17	LAST 1402	07,3343	05 014 1		WOR	CHAN14	
0451	REP	70	LAST 1396	07,3344	1 5213 0		TCP	TASKOVER	
0452	REP	26	LAST 1402	07,3345	50 061 0	LONGGYRO	INDEX	ITEMP1	
0453				07,3346	53=401 1		DXCH	1400	
0454	REP	78	LAST 1402	07,3347	3 4675 1		CAP	BIT14	
0455	REP	21	LAST 1403	07,3350	6 0062 0		AD	ITEMP2	
0456	REP	4	LAST 1403	07,3351	54 047 0		TS	GYROCMD	
0457				07,3352	0 0008 1	AUG3	EXTEND		
0458	REP	45	LAST 1403	07,3353	7 4701 1		MP	BIT10	
0459	REP	4	LAST 1384	07,3354	6 7714 1		AD	NEG3	
0460	REP	59	LAST 1403	07,3355	0 5140 1		TC	WAITLIST	
0461	REP	23	LAST 1403	E3,1474			EBANK	CDUIND	
0462	REP	1		07,3356	03361 0		ZCADR	6192AUG	
0462	REP	1		07,3357	18103 1				
0463	REP	1		07,3360	1 3341 0		TCP	GYROEXIT	
0464	REP	7	LAST 1400	07,3361	0 3443 1	8192AUG	TC	CAGETEST	
04641	REP	47	LAST 1400	07,3362	3 4707 0		CAP	BIT4	
04642				07,3363	0 0008 1		EXTEND		
04643	REP	47	LAST 1396	07,3364	02 012 0		RAND	CHAN12	
04644	REP	381	LAST 1402	07,3365	10 000 0		CCS	A	
04645	REP	3	LAST 1393	07,3366	1 3441 1		TCP	IMRAD	
0465	REP	10	LAST 1401	07,3367	3 1304 1		CA	LOYRO	
0466	REP	61	LAST 1401	07,3370	54 003 0		TS	EBANK	
0467	REP	16	LAST 1401	07,3371	7 4373 0		MASK	LOW6	
0468	REP	27	LAST 1403	07,3372	54 061 1		TS	ITEMP1	
0469	REP	28	LAST 1403	07,3373	50 061 0		INDEX	ITEMP1	
0470				07,3374	11=400 0		CCS	1400	
0471	REP	1		07,3375	1 3401 0		TCP	AUG2	
0472	REP	79	LAST 1403	07,3376	3 4675 1		CAP	BIT14	
0473	REP	5	LAST 1403	07,3377	26 047 0		ADS	GYROCMD	
0474	REP	1		07,3400	1 3333 0		TCP	LASTSEG +1	

ENTIRE COMMAND.

WAITLIST DT
TRUNCATION AND PHASE UNCERTAINTIES.INITIAL COMMAND OUT PLUS N AUGMENTS OF
6192.. INITIAL COMMAND IS AT LEAST 6192.GET WAITLIST DT TO TIME WHEN TRAIN IS
ALMOST OUT.

ADD 6192 PULSES TO GYROCMD

SEE IF THIS IS THE LAST AUG.
MORE TO COME.



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0475	REP	29	LAST 1403	07,3401	50 061 0	AUG2	INDEX	ITEMP1
0476				07,3402	55=400 0		TS	1400
0477	REP	80	LAST 1403	07,3403	3 4675 1		CAP	BIT14
0478	REP	6	LAST 1403	07,3404	26 047 0		ADS	GYROCMD
0479	REP	1		07,3405	1 3352 1		TCP	AUG3

COMPUTE DT.

L IMU MODE SWITCHING ROUTINES

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0480	RESP	2	LAST 1402	07,3406	6 3322 1	MIN-	AD	-GYROMIN	
0481				07,3407	0 0006 1		EXTEND		
0482	RESP	4	LAST 1402	07,3410	6 3213 1		BZ-MF	STRTOYR2	
0483				07,3411	0 0006 1	MAJ-	EXTEND		
0484	RESP	2	LAST 1402	07,3412	4 3432 0		DCS	GYROPAC	
0485	RESP	34	LAST 1402	07,3413	20 071 0		DAS	RUPTREG1	
0486	RESP	8	LAST 1402	07,3414	3 0064 0		CA	ITEMP4	
0487	RESP	36	LAST 1402	07,3415	6 4702 0		AD	BIT9	
0488				07,3416	0 0006 1		EXTEND		
0489	RESP	18	LAST 1403	07,3417	05 014 1		WOR	CHAN14	
0490	RESP	35	LAST 1405	07,3420	4 0070 1		CS	RUPTREG1	
0491	RESP	36	LAST 1405	07,3421	54 070 1		TS	RUPTREG1	
0492	RESP	10	LAST 1402	07,3422	4 0071 0		CS	RUPTREG2	
0493	RESP	11	LAST 1402	07,3423	7 6043 1		MASK	LOW7	
0494				07,3424	4 0000 0		COM		
0495	RESP	11	LAST 1405	07,3425	56 071 1		XCH	RUPTREG2	
0496				07,3426	4 0000 0		COM		
0497	RESP	1		07,3427	1 3302 1		TCP	QMERGE	
0498				07,3430	01700 1	GOSELECT OCT		1700	
0499				07,3431	00000 1	GYROPAC 2DEC		.215 B -21	
0499				07,3432	00034 0				

POSSIBLE NEGATIVE OUTPUT.

DEFINITE NEGATIVE OUTPUT.

SELECT NEGATIVE TORQUING FOR THIS GYRO.

SET UP RUPTREGS TO FALL INTO QMERGE.
ALL NUMBERS PUT INTO GYROCMD ARE
POSITIVE - BIT9 OF CHAN 14 DETERMINES
THE SIGN OF THE COMMAND.

TURN OFF SELECT AND ACTIVITY BITS.



L IMU MODE SWITCHING ROUTINES

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P0500 IMU MODE SWITCHING ROUTINES COME HERE WHEN ACTION COMPLETE.

0501				07,3433	0 0006 1	ENDIMU	EXTEND	
0502	REF	33	LAST 1190	07,3434	00 011 1	READ	DSALMOUT	
0503	REF	80	LAST 1397	07,3435	7 4712 0	MASK	BIT1	
0504	REF	382	LAST 1403	07,3438	10 000 0	CCS	A	
0505	REF	4	LAST 1403	07,3437	1 3441 1	TCP	IMUBAD	
0506	REF	3	LAST 578	07,3440	1 3467 0	IMUGOOD	TCP	GOODEND
0507	REF	280	LAST 1402	07,3441	3 4714 1	IMUBAD	CAP	ZERO
0508	REF	2	LAST 578	07,3442	1 3464 0	TCP	BADEND	
0509	REF	52	LAST 1398	07,3443	3 4705 1	CAGETEST	CAP	BIT8
0510	REF	60	LAST 1397	07,3444	7 1320 0	MASK	IMODES30	
0511	REF	383	LAST 1406	07,3445	10 000 0	CCS	A	
0512	REF	5	LAST 1406	07,3446	1 3441 1	TCP	IMUBAD	
0513	REF	324	LAST 1401	07,3447	0 0002 0	TC	Q	
0514	REF	61	LAST 1406	07,3450	4 1320 0	CAGETSTQ	CS	IMODES30
0515	REF	53	LAST 1406	07,3451	7 4705 0	MASK	BIT8	
0516	REF	384	LAST 1406	07,3452	10 000 0	CCS	A	
0517	REF	325	LAST 1406	07,3453	24 002 0	INCR	Q	
0518	REF	326	LAST 1406	07,3454	0 0002 0	TC	Q	
0519	REF	62	LAST 1406	07,3455	4 1320 0	CAGETSTJ	CS	IMODES30
0520	REF	54	LAST 1406	07,3456	7 4705 0	MASK	BIT8	
0521	REF	385	LAST 1406	07,3457	10 000 0	CCS	A	
0522	REF	327	LAST 1406	07,3460	0 0002 0	TC	Q	
0523	REF	261	LAST 1406	07,3461	4 4714 0	CS	ZERO	
0524	REF	3	LAST 1195	07,3462	55*322 1	TS	IMUCADR	
0525	REF	7	LAST 1398	07,3463	1 2557 0	TCP	MODEEXIT	

MODE IS BAD IF CAGE HAS OCCURED OR IF
ISS WARNING IS ON.

WITH C(A) = 0.

SUBROUTINE TO TERMINATE IMU MODE
SWITCH IF IMU HAS BEEN CAGED.DIRECTLY.
WITH C(A) = +0.

SKIP IF IMU NOT BEING CAGED.

IF DURING MODE SWITCH INITIALIZATION
IT IS FOUND THAT THE IMU IS BEING CAGED,
SET IMUCADR TO -0 TO INDICATE OPERATION
COMPLETE BUT FAILED. RETURN IMMEDIATELY

TO SWRETURN.



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P0526 GENERALIZED MODE SWITCHING TERMINATION. ENTER AT GOODEND FOR SUCCESSFUL COMPLETION OF AN I/O OPERATION
R0526 OR AT BADEND FOR A N UNSUCCESSFUL ONE. C(A) OR ARRIVAL =0 FOR IMU, 1 FOR OPTICS.

0530	REP	12	LAST	1405	07,3464	54	071	0	BADEND	TS	RUPTRREG2	DEVICE INDEX.
0531	REP	202	LAST	1406	07,3465	4	4714	0		CS	ZERO	FOR FAILURE.
0532	REP	4	LAST	1406	07,3466	1	3471	1		TCP	GOODEND +2	
0533	REP	13	LAST	1407	07,3467	54	071	0	GOODEND	TS	RUPTRREG2	
0534	REP	161	LAST	1399	07,3470	4	4712	0		CS	ONE	FOR SUCCESS.
0535	REP	6	LAST	1379	07,3471	54	072	0		TS	RUPTRREG3	
0536	REP	14	LAST	1407	07,3472	50	071	1		INDEX	RUPTRREG2	SEE IF USING PROGRAM ASLEEP.
0537	REP	5	LAST	237	07,3473	11	322	1		CCS	MODECADR	
0538					07,3474	1	3476	0		TCP	+2	YES - WAKE IT UP.
0539	REP	1			07,3475	1	3506	0		TCP	ENDMODE	IF 0, PROGRAM NOT IN YET.
0540	REP	283	LAST	1407	07,3476	3	4714	1		CAP	ZERO	WAKE SLEEPING PROGRAM.
0541	REP	15	LAST	1407	07,3477	50	071	1		INDEX	RUPTRREG2	
0542	REP	6	LAST	1407	07,3500	57	322	0		XCH	MODECADR	
0543	REP	7	LAST	1400	07,3501	0	5074	1		TC	JOBWAKE	
0544	REP	7	LAST	1407	07,3502	4	0072	0		CS	RUPTRREG3	ADVANCE LOC IF SUCCESSFUL.
0545	REP	23	LAST	1294	07,3503	50	084	0		INDEX	LOCCTR	
0546	REP	41	LAST	1190	07,3504	28	164	0		ADS	LOC	
0547	REP	71	LAST	1403	07,3505	1	5213	0		TCP	TASKOVER	
0548	REP	6	LAST	1407	07,3506	3	0072	1	ENDMODE	CA	RUPTRREG3	-0 INDICATES OPERATION COMPLETE BUT
0549	REP	16	LAST	1407	07,3507	50	071	1		INDEX	RUPTRREG2	UNSUCCESSFUL - -1 INDICATES COMPLETE AND
0550	REP	7	LAST	1407	07,3510	55	322	1		TS	MODECADR	SUCCESSFUL.
0551	REP	72	LAST	1407	07,3511	1	5213	0		TCP	TASKOVER	

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P0552 GENERAL STALLING ROUTINE. USING PROGRAMS COME HERE TO WAIT FOR I/O COMPLETION.

R0554 PROGRAM DESCRIPTION
R0555 DATE- 21 FEB 1967
R0556 MOD BY- R.MELANSON TO ADD DOCUMENTATION LOG SECTION IMU MODE SWITCHING
ASSEMBLY SUNDISK REV. 82

R0557 FUNCTIONAL DESCRIPTION-
R0558 TO DELAY FURTHER EXECUTION OF THE CALLING ROUTINE UNTIL ITS SELECTED
R0559 I/O FUNCTION IS COMPLETE. THE FOLLOWING CHECKS ON THE CALLING ROUTINE'S
R0560 MODECADR ARE MADE AND ACTED UPON.

- R0561 1) +0 INDICATES INCOMPLETE I/O OPERATION. CALLING ROUTINE IS PUT TO
R0562 SLEEP.
- R0563 2) -1 INDICATES COMPLETED I/O OPERATION. STALL BYPASSES JOBSLEEP
R0564 CALL AND RETURNS TO CALLING ROUTINE AT L+3
- R0565 3) -0 INDICATES COMPLETED I/O WITH FAILURE. STALL CLEARS MODECADR
R0566 AND RETURNS TO CALLING ROUTINE AT L+2.
- R0567 4) VALUE GREATER THAN 0 INDICATES TWO ROUTINES CALLING FOR USE OF
R0568 SAME DEVICE. STALL EXITS TO ABORT WHICH EXECUTES A PROGRAM
R0569 RESTART WHICH IN TURN CLEARS ALL MODECADR REGISTERS.

R0570 CALLING SEQUENCE-
R0571 L TC BANKCALL
R0572 L+1 CADR (ONE OF 5 STALL ADDRESSES I.E. IMUSTALL, OPTSTALL, RADSTALL,
R0573 AOTSTALL, OR ATTSTALL)

R0574 NORMAL EXIT MODE-
R0575 TCF JOBSLEEP OR TCF MODEEXIT

R0576 ALARM OR ABORT EXIT MODE-
R0577 TC ABORT

R0578 OUTPUT-
R0579 MODECADR= CADR IF JOBSLEEP
R0580 MODECADR=+0 IF I/O COMPLETE
R0581 BUF2=L+3 IF I/O COMPLETE AND GOOD.
R0582 BUF2=L+2 IF I/O COMPLETE BUT FAILED.

R0583 ERASABLE INITIALIZATION-
R0584 BUF2 CONTAINS RETURN ADDRESS PLUS 1, (L+2)
R0585 BUF2+1 CONTAINS FBANK VALUE OF CALLING ROUTINE.
R0586 MODECADR OF CALLING ROUTINE CONTAINS +0, -1, -0 OR CADR RETURN ADDRESS.

R0587 DEBRIS-
R0588 RUPTRREG2 AND CALLING ROUTINE MODECADR.

0589	REF 162	LAST 1407	07,3512	3 4712 1	AOTSTALL CAP	ONE	AOT.
0590	REF 1		07,3513	0 3517 1	TC	STALL	
0591	REF 74	LAST 1398	07,3514	3 4711 1	RADSTALL CAP	TWO	
0592	REF 2	LAST 1408	07,3515	1 3517 0	TCF	STALL	

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0593	REF	1		07,3512		OPTSTALL	EQUALS	AOTSTALL	
0594	REF	264	LAST 1407	07,3516	3 4714 1	IMUSTALL	CAF	ZERO	
0595				07,3517	0 0004 0	STALL		INHINT	
0596	REF	17	LAST 1407	07,3520	54 071 0	TS		RUPTREG2	
0597	REF	386	LAST 1408	07,3521	50 000 1	INDEX		A	
0598	REF	8	LAST 1407	07,3522	11=322 1	CCS		MODECADR	
0599	REF	1		07,3523	1 3541 0	TCF		MODABORT	
0600	REF	1		07,3524	1 3535 0	TCF		MODESLP	
0601	REF	1		07,3525	1 3531 1	TCF		MODEGOOD	
0602	REF	18	LAST 1409	07,3526	50 071 1	MG2		INDEX	RUPTREG2
0603	REF	9	LAST 1409	07,3527	55=322 1	TS		MODECADR	
0604	REF	8	LAST 1408	07,3530	1 2557 0	TCF		MODEEXIT	
0605	REF	387	LAST 1409	07,3531	10 000 0	MODEGOOD	CCS	A	
0606	REF	2	LAST 1409	07,3532	1 3541 0	TCF		MODABORT	
0607	REF	22	LAST 1399	07,3533	24 133 0	INCR		BUF2	
0608	REF	1		07,3534	1 3528 1	TCF		MG2	
0609	REF	5	LAST 730	07,3535	0 4804 1	MODESLP	TC	MAKECADR	
0610	REF	19	LAST 1409	07,3536	50 071 1	INDEX		RUPTREG2	
0611	REF	10	LAST 1409	07,3537	55=322 1	TS		MODECADR	
0612	REF	6	LAST 1399	07,3540	1 5070 1	TCF		JOBSLEEP	
0613	REF	4	LAST 1154	07,3541	0 5622 1	MODABORT	TC	POODOO	
0614				07,3542	01210 0	OCT		1210	

IMU.

SAVE DEVICE INDEX.
SEE IF OPERATION COMPLETE.

ALLOWABLE STATES ARE +0, -1, AND -0.
OPERATION INCOMPLETE.
COMPLETE AND GOOD IF = -1.

COMPLETE AND FAILED IF -0. RESET TO +0.
RETURN TO CALLER.

MAKE SURE INITIAL STATE -1.

IF SO, INCREMENT RETURN ADDRESS AND
RETURN IMMEDIATELY, SETTING CADR = +0.

CALL FROM SWITCHABLE FIXED ONLY.

TWO PROGRAMS USING SAME DEVICE.



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P0615 CONSTANTS FOR MODE SWITCHING ROUTINES

0616	REP	4	LAST	1011	5656		BITS3d4	=	OCT14
0617	REP	5	LAST	1364	4726		BITS4d6	=	OCT50
0618					07,3543	00030 1	BITS4-5	OCT	00030
0619	REP	31	LAST	1402	4703		IMUSEPLG	EQUALS	BIT8
0620					07,3544	77500 1	-COMMAX	DEC	-191
0621					07,3545	77477 0	-COMMAX-	DEC	-192
0622					07,3546	00074 1	600MS	DEC	60
0623	REP	3	LAST	417	07,3012		IMUPIN20	=	IMUPINE
0624	REP	4	LAST	411	07,3547	3 1325 1	GOMANUR	CA	ATTICADR
0625					07,3550	0 0006 1		EXTEND	
0626					07,3551	1 3554 1		BZP	+3
0627	REP	5	LAST	1409	07,3552	0 5622 1	TC	POODOO	
0628					07,3553	01210 0	OCT	1210	
0629					07,3554	0 0006 1	+3	EXTEND	
0630	REP	23	LAST	1409	07,3555	3 0134 1	DCA	BUF2	
0632	REP	5	LAST	1410	07,3556	53=326 0	DXCH	ATTICADR	
0633	REP	34	LAST	1379	07,3557	3 0006 1	CA	BBANK	
0634	REP	22	LAST	1401	07,3560	7 4716 1	MASK	SEVEN	
0635	REP	6	LAST	1410	07,3561	27=326 0	ADS	ATTICADR +1	
0642	REP	27	LAST	1166	07,3562	3 0167 1	CA	PRIORITY	
0643	REP	2	LAST	196	07,3563	7 7674 1	MASK	PRIO37	
0644	REP	2	LAST	411	07,3564	55=327 1	TS	ATTIPRIO	
06452	REP	1			07,3565	3 3571 1	CAP	KALEBCON	
06453	REP	62	LAST	1403	07,3566	54 003 0	TS	EBANK	
06454	REP	62	LAST	1385	07,3567	0 4574 0	TC	POSTJUMP	
06455	REP	1			07,3570	44000 1	CADR	KALCMAN3	
06456	REP	16	LAST	410	07,3571	03261 1	KALEBCON	BCADR	BODU

INTERPRETER SWITCH 7.

IS KALCMANU FREE

NO
2 TRYING TO USE SAME DEVICE

SAVE FINAL RETURN FOR KALCMAN3

SAVE USERS PRIO

SET EBANK FOR KALCMAN3



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R0646 PROGRAM DESCRIPTION
R0647 IMU STATUS CHECK ROUTINE R02 (SUBROUTINE UTILITY)
R0648 MOD NO - 1
R0649 MOD BY - N.BRODEUR
R0650 FUNCTIONAL DESCRIPTION
R0651
R0652 TO CHECK WHETHER IMU IS ON AND IF ON WHETHER IT IS ALIGNED TO AN
R0653 ORIENTATION KNOWN BY THE CMC. TO REQUEST SELECTION OF THE APPROPRIATE
R0654 PROGRAM IF THE IMU IS OFF OR NOT ALIGNED TO AN ORIENTATION KNOWN BY THE
R0655 CMC. CALLED THROUGH BANKCALL
R0656 CALLING SEQUENCE--
R0657
R0658 L TC BANKCALL
R0659 L+1 CADR R02BOTH
R0660 SUBROUTINES CALLED
R0661
R0662 VARALARM
R0663 FLAGUP
R0664 NORMAL EXIT MODES
R0665
R0666 AT L+2 OF CALLING SEQUENCE
R0667 ALARM OR ABORT EXIT MODES
R0668 GOTOPOOH, WITH ALARM
R0673 ERASABLE INITIALIZATION REQUIRED
R0674
R0675 NONE
R0676 DEBRIS
R0677
R0678 CENTRALS-A, O, L
R0679 34,3775
R0680 REF 1 07,2000
R0681 07,3572
R0682 REF 1

R0683 07,3572 00063 1 DEC51 DEC 51
R0684 REF 50 LAST 1401 07,3573 3 4676 1 R02BOTH CAP BIT13
R0685 REF 51 LAST 1168 07,3574 7 0077 0 MASK STATE +3 REFSMPLG
R0686 REF 388 LAST 1409 07,3575 10 000 0 CCS A
R0687 REF 2 LAST 722 07,3576 0 3807 0 TC R02ZERO ZERO IMUS

R0688 REF 63 LAST 1406 07,3577 3 1320 1 CA IMODES30
R0689 REF 37 LAST 1405 07,3600 7 4702 1 MASK BIT9 IS ISS INITIALIZED
R0690 07,3601 0 0006 1 EXTEND
R0691 07,3602 1 3604 1 BZF +2
R0692 REF 48 LAST 1403 07,3603 4 4707 1 CS BIT4 SEND IMU ALARM CODE 210
R0693 REF 1 07,3604 6 3612 1 AD OCT220 SEND REFSM ALARM
R0694 REF 3 LAST 853 07,3605 0 5651 0 TC VARALARM

R0695 REF 70 LAST 853 07,3606 0 4108 1 TC GOTOPOOH



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0700	REP	52	LAST 1328	07,3607	0 5435 0	R02ZERO	TC	UPFLAG
0701	REP	4	LAST 420	07,3610	00007 0		ADRES	IMUSE
0702	REP	9	LAST 1397	07,3611	1 4570 0		TCP	SWRETURN
07025				07,3612	00220 1	OCT220	OCT	220

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R0703 PROGRAM DESCRIPTION P06 10FEB67

R0704 TRANSFER THE ISS/CMC FROM THE OPERATE TO THE STANDBY CONDITION.

R0705 THE NORMAL CONDITION OF READINESS OF THE CMCs WHEN NOT IN USE IS STANDBY. IN THIS CONDITION THE IMU
 R0707 HEATER POWER IS ON. THE IMU OPERATE POWER IS OFF. THE COMPUTER POWER IS ON. THE OPTICS POWER IS OFF. THE
 R0709 CMC STANDBY ON THE MAIN AND LEB DISKS IS ON.

R0710 CALLING SEQUENCE:

R0711 ASTRONAUT REQUEST THROUGH DSKY V37E 06E.

R0712 SUBROUTINES CALLED:

R0713 GOPERF1

R0716 BANKCALL

R0719 FLAGDOWN



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P0810 PRESTAND PREPARES FOR STANDBY BY SNAPSHOTTING THE SCALER AND TIME1 TIME2
R0811 THE LOW 5 BITS OF THE SCALER ARE INSPECTED TO INSURE COMPATABILITY
R0812 BETWEEN THE SCALER READING AND THE TIME1 TIME2 READING.

08125	REF	1		26,2000				SETLOC P05P08		
08126				26,3655				BANK		
0813	REF	3	LAST	202	1150			EBANK= TIME2SAV		
0814	REF	1						COUNT* \$S/P08		
08145	REF	53	LAST	1412	26,3655	0 5435	0	P08	TC UPFLAG	SET NODOV37 BIT
08146	REF	3	LAST	1284	26,3658	00054	0		ADRES NODOFLAG	
0815					26,3657	0 0004	0	PRESTAND	INHINT	
0816					26,3680	0 0008	1		EXTEND	
0817	REF	31	LAST	1366	26,3681	3 0025	0		DCA TIME2	SNAPSHOT TIME1TIME2
0818	REF	4	LAST	1414	26,3682	53=151	1		DXCH TIME2SAV	
0819	REF	1			26,3683	0 3714	0		TC SCALPREP	
0820	REF	1			26,3684	0 3857	0		TC PRESTAND	T1,T2,SCALER NOT COMPATIBLE
0821	REF	687	LAST	1399	26,3685	52 155	1		DXCH MPAC	T1,T2 AND SCALER OK
0822	REF	1			26,3686	53=153	0		DXCH SCALSAVE	STORE SCALER
0823					26,3687	0 0004	0		INHINT	
0824	REF	246	LAST	1037	26,3670	0 4555	0		TC BANKCALL	
0825	REF	3	LAST	150	26,3671	18777	1		CADR RNDREFDR	REFSM, DRIFT, TRACK FLAGS DOWN
0828	REF	55	LAST	1284	26,3672	0 5447	0		TC DOWNFLAG	
0827	REF	5	LAST	1412	26,3673	00007	0		ADRES IMUSE	IMUSE DOWN
08271	REF	56	LAST	1414	26,3674	0 5447	0		TC DOWNFLAG	
08272	REF	5	LAST	610	26,3675	00010	0		ADRES RNDVZPLG	RNDVZPLG DOWN
0828	REF	37	LAST	1390	26,3678	3 4700	1		CAP BIT11	
0829					26,3677	0 0008	1		EXTEND	
0830	REF	14	LAST	1088	26,3700	05 013	0		WOR CHAN13	SET STANDBY ENABLE BIT
0831	REF	101	LAST	1377	26,3701	0 5301	0		TC PHASCHNG	SET RESTART TO POSTAND WHEN STANDBY
0832					26,3702	07024	0		OCT 07024	RECOVERS
0833					26,3703	20000	0		OCT 20000	
08335	REF	2	LAST	1414	1152				EBANK= SCALSAVE	
0834	REF	1			26,3704	03734	1		2CADR POSTAND	
0834	REF	1			26,3705	54102	0			
0835	REF	1			26,3706	3 4731	0		CAP OCT82	
0838	REF	247	LAST	1414	26,3707	0 4555	0		TC BANKCALL	
0837	REF	7	LAST	736	26,3710	20751	0		CADR GOPERF1	
0838					26,3711	1 3708	1		TCF -3	
0839					26,3712	1 3708	1		TCF -4	
0840					26,3713	1 3708	1		TCF -5	
08405	REF	9	LAST	1037	4731			OCT82	EQUALS .5SEC	DEC 50 = OCT 82

R0841 THE LOW 5 BITS OF THE SCALER READS 10000 FOR THE FIRST INTERVAL AFTER A

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R0842 T1 INCREMENT. IF SCALPREP DETECTS THIS INTERVAL THE T1,T2 AND SCALER
R0843 DATA ARE NOT COMPATABLE AND RETURN IS TO L+1 FOR ANOTHER READING OF THE
R0844 DATA. OTHERWISE, THE RETURN IS TO L+2 TO PROCEED. ROUTINE ALSO PREPARES
R0845 THE SCALER READING FOR COMPUTATION OF THE INCREMENT TO UPDATE T1T2. (THE
R0846 10 MS BIT (BIT 6) OF THE SCALER IS INCREMENTED 5 MS OUT OF PHASE FROM
R0847 T1.) ADDITION OF 5 MS (BIT 5) TO THE SCALER READING HAS THE EFFECT OF
R0848 ADJUSTING BIT 6 IN THE SCALER TO BE IN PHASE WITH BIT 1 OF T1. THE LOW 5
R0849 BITS OF THE SCALER READING ARE THEN SET TO ZERO, TO TRUNCATE THE SCALER
R0850 DATA TO 10 MS. RESULTS ARE STORED IN MPAC, +1.

0851			26,3714	0 0008 1	SCALPREP EXTEND		
0852	REF 688	LAST 1414	26,3715	22 156 0	QXCH	MPAC +2	
0853	REF 3	LAST 424	26,3716	0 4527 0	TC	FINETIME +1	
0854			26,3717	0 0003 1	RELINT		
0855	REF 689	LAST 1415	26,3720	52 155 1	DXCH	MPAC	
0856	REF 44	LAST 1396	26,3721	3 4708 1	CA	BITS	ADD 5 MS TO THE SCALER READING.
0857	REF 228	LAST 1402	26,3722	54 001 1	TS	L	
0858	REF 285	LAST 1409	26,3723	3 4714 1	CA	ZERO	
0859	REF 690	LAST 1415	26,3724	20 155 1	DAS	MPAC	
0860	REF 9	LAST 356	26,3725	4 4382 0	CS	LOW5	SET LOW 5 BITS OF (SCALER+5MS) TO ZERO
0861	REF 691	LAST 1415	26,3726	7 0155 1	MASK	MPAC +1	AND STORE RESULTS IN MPAC,+1.
0862	REF 692	LAST 1415	26,3727	56 155 0	XCH	MPAC +1	
0863	REF 10	LAST 1415	26,3730	7 4382 0	MASK	LOW5	TEST LOW 5 BITS OF SCALER FOR THE FIRST
A0864							INTERVAL AFTER THE T1 INCREMENT
A0865							(NOW = 00000, SINCE BIT 5 ADDED).
0866	REF 389	LAST 1411	26,3731	10 000 0	CCS	A	IS IT 1ST INTERVAL AFTER T1 INCREMENT
0867	REF 693	LAST 1415	26,3732	24 156 0	INCR	MPAC +2	NO
0868	REF 694	LAST 1415	26,3733	0 0156 0	TC	MPAC +2	YES

R0869 POSTAND RECOVERS TIME AFTER STANDBY. THE SCALER IS SNAPSHOTTED AND THE
R0870 TIME1 TIME2 COUNTER IS SET TO ZERO. THE LOW 5 BITS OF THE SCALER ARE
R0871 INSPECTED TO INSURE COMPATABILITY BETWEEN THE SCALER READING AND THE
R0872 CLEARING OF THE TIME COUNTER. IT THEN COMPUTES THE DIFFERENCE IN SCALER
R0873 VALUES (IN DP) AND ADDS THIS TO THE PREVIOUSLY SNAPSHOTTED VALUES OF
R0874 TIME1 TIME2 AND PLACES THIS NEW TIME INTO THE TIME1 TIME2 COUNTER.

0875	REF				COUNT* 55/P05		
0876	REF 38	LAST 1414	26,3734	4 4700 0	POSTAND	CS	BIT11
0877			26,3735	0 0008 1		EXTEND	RECOVER TIME AFTER STANDBY.
0878	REF 15	LAST 1414	26,3736	03 013 0	WAND	CHAN13	CLEAR STANDBY ENABLE BIT
0879			26,3737	0 0004 0	INHINT		
0880	REF 286	LAST 1415	26,3740	3 4714 1	CA	ZERO	
0881	REF 227	LAST 1415	26,3741	54 001 1	TS	L	
0882	REF 32	LAST 1414	26,3742	52 025 1	DXCH	TIME2	CLEAR TIME1TIME2
0883	REF 2	LAST 1414	26,3743	0 3714 0	TC	SCALPREP	STORE SCALER IN MPAC, MPAC+1
0884	REF 2	LAST 1414	26,3744	0 3737 1	TC	POSTAND +3	T1,T2,SCALER NOT COMPATIBLE
0885			26,3745	0 0008 1	EXTEND		T1,T2 AND SCALER OK
0886	REF 3	LAST 1414	26,3746	4 1153 0	DCS	SCALSAVE	
0887	REF 695	LAST 1415	26,3747	20 155 1	DAS	MPAC	FORM DP DIFFERENCE OF POSTSTANDBY SCALER



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0888	RESP	48	LAST 1403	26,3750	3 4701 0	CAP	BIT10	MINUS PRESTANDBY SCALAR AND SHIFT RIGHT
0889	RESP	9	LAST 374	26,3751	0 7256 1	TC	SHORTMP	5 TO ALIGN BITS WITH TIME1TIME2.
0890	RESP	267	LAST 1415	26,3752	3 4714 1	CAP	ZERO	
0891	RESP	696	LAST 1415	26,3753	54 156 1	TS	MPAC +2	NEEDED FOR TP AGREE
0892	RESP	12	LAST 1398	26,3754	0 7226 0	TC	TPAGREE	MAKE DP DIFF AGREE
0893	RESP	697	LAST 1416	26,3755	10 154 0	CCS	MPAC	
0894	RESP	1		26,3756	0 3763 0	TC	POSTCOM	IF DP DIFF NET +, NO SCALAR OVERFLOW
0895	RESP	2	LAST 1416	26,3757	0 3763 0	TC	POSTCOM	BETWEEN PRE AND POST STANDBY.
0896	RESP			26,3760	0 3761 1	TC	+1	IF DP DIFF NET -, SCALAR OVERFLOWED. ADD
0897	RESP	47	LAST 1416	26,3761	3 4701 0	CAP	BIT10	BIT 10 TO HIGH DIFF TO CORRECT.
0898	RESP	698	LAST 1416	26,3762	26 154 0	ADS	MPAC	
0899	RESP			26,3763	0 0006 1	POSTCOM	EXTEND	C(MPAC,+1) IS MAGNITUDE OF DELTA SCALAR.
0900	RESP	5	LAST 1414	26,3764	3 1151 0	DCA	TIME2SAV	PRESTANDBY TIME1TIME2
0901	RESP	699	LAST 1416	26,3765	20 155 1	DAS	MPAC	
0902	RESP	13	LAST 1416	26,3766	0 7226 0	TC	TPAGREE	FORCE SIGN AGREEMENT
0903	RESP	700	LAST 1416	26,3767	52 155 1	DXCH	MPAC	UPDATED VALUE FOR T1,T2.
0904	RESP	33	LAST 1415	26,3770	20 025 1	DAS	TIME2	LOAD UPDATED VALUE INTO T1,T2, WITH
09045	RESP	57	LAST 1414	26,3771	0 5447 0	TC	DOWNFLAG	CLEAR NODOFLAG
09046	RESP	4	LAST 1414	26,3772	00054 0	ADRES	NODOFLAG	
0905	RESP	71	LAST 1411	26,3773	0 4106 1	TC	GOTOPOOH	

L KEYRUPT, UPRUPT

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0001			14,3744			BANK 14
0002	REF 1		07,2000			SETLOC KEYRUPT
0003			07,3613			BANK
0004	REF 1					COUNT* \$\$/KEYUP
0005	REF 25	LAST 1202	07,3613	54 016 1	KEYRUPT1	TS BANKRUPT
0006	REF 328	LAST 1406	07,3614	56 002 0	XCH	Q
0007	REF 20	LAST 1202	07,3615	54 012 0	TS	CRUPT
0008	REF 2	LAST 350	07,3616	0 4414 1	TC	LODSAMPT
0009	REF 11	LAST 1415	07,3617	3 4362 1	CAP	LOWS
0010			07,3620	0 0006 1	EXTEND	
0011	REF 2	LAST 185	07,3621	02 015 1	RAND	MNKEYIN
0012	REF 6	LAST 1379	07,3622	54 073 1	KEYCOM	TS RUPTREG4
0013	REF 14	LAST 654	07,3623	4 0101 0	CS	FLAGWRDS
0014	REF 53	LAST 1396	07,3624	7 4674 1	MASK	BIT15
0015	REF 15	LAST 1417	07,3625	26 101 0	ADS	FLAGWRDS
0016	REF 6	LAST 1174	07,3626	3 4371 0	ACCEPTUP	CAP CHRPRIO
0017	REF 33	LAST 1387	07,3627	0 5027 1	TC	NOVAC
0018	REF 66	LAST 370	0777		BRANK=	DSPCOUNT
0019	REF 1		07,3630	02000 0	2CADR	CHARIN
0019	REF 1		07,3631	60101 1		
0020	REF 7	LAST 1417	07,3632	3 0073 0	CA	RUPTREG4
0021	REF 24	LAST 1407	07,3633	50 064 0	INDEX	LOCCTR
0022	REF 701	LAST 1416	07,3634	54 154 0	TS	MPAC
0023	REF 48	LAST 1069	07,3635	0 5222 0	TC	RESUME

TIME IS SNATCHED IN RUPT FOR MOUN 65.

CHECK IF KEYS 5M-1M ON

(NOTE' RUPTREG4 = KEYTEMP1)

LEAVE 5 BIT KEY CDS IN MPAC FOR CHARIN



L KEYRUPT, UPRUPT

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P0024 UPRUPT PROGRAM

0025	REP	26	LAST	1417	07,3636	54 016 1	UPRUPT	TS	BANKRUPT
0026	REP	329	LAST	1417	07,3637	56 002 0		XCH	Q
0027	REP	21	LAST	1417	07,3640	54 012 0		TS	ORUPT
0028	REP	3	LAST	1417	07,3641	0 4414 1		TC	LODSAMPT
0029	REP	266	LAST	1416	07,3642	3 4714 1		CAP	ZERO
0030	REP	2	LAST	186	07,3643	56 045 0		XCH	INLINK
0031	REP	2	LAST	126	07,3644	54 073 1		TS	KEYTEMP1
0032	REP	34	LAST	1363	07,3645	3 4710 0		CAP	BIT3
0033					07,3646	0 0006 1		EXTEND	
0034	REP	34	LAST	1406	07,3647	05 011 1		WOR	DSALMOUT
0035	REP	12	LAST	1417	07,3650	3 4362 1	UPRPT1	CAP	LOW5
0036	REP	3	LAST	1416	07,3651	7 0073 1		MASK	KEYTEMP1
0037	REP	4	LAST	1416	07,3652	56 073 0		XCH	KEYTEMP1
0038					07,3653	0 0006 1		EXTEND	
0039	REP	46	LAST	1416	07,3654	7 4701 1		MP	BIT10
0040	REP	1			07,3655	54 734 0		TS	KEYTEMP2
0041	REP	13	LAST	1416	07,3656	7 4362 0		MASK	LOW5
0042	REP	1			07,3657	6 3713 1		AD	HI10
0043	REP	1			07,3660	0 3710 1		TC	UPTTEST
0044	REP	49	LAST	1416	07,3661	3 4701 0		CAP	BIT10
0045					07,3662	0 0006 1		EXTEND	
0046	REP	2	LAST	1416	07,3663	7 0734 0		MP	KEYTEMP2
0047	REP	14	LAST	1418	07,3664	7 4362 0		MASK	LOW5
0048					07,3665	4 0000 0		COM	
0049	REP	2	LAST	1416	07,3666	0 3710 1		TC	UPTTEST
0050	REP	1			07,3667	4 3716 0	UPOK	CS	ELRCODE
0051	REP	5	LAST	1416	07,3670	6 0073 0		AD	KEYTEMP1
0052					07,3671	0 0006 1		EXTEND	
0053	REP	1			07,3672	1 3700 1		BZF	CLUPLOCK
0054	REP	49	LAST	1411	07,3673	3 4707 0		CAP	BIT4
0055	REP	19	LAST	777	07,3674	7 0103 1		MASK	FLAGWRD7
0056	REP	390	LAST	1415	07,3675	10 000 0		CCS	A
0057	REP	49	LAST	1417	07,3676	0 5222 0		TC	RESUME
0058	REP	1			07,3677	0 3626 0		TC	ACCEPTUP
0059	REP	50	LAST	1416	07,3700	4 4707 1	CLUPLOCK	CS	BIT4
0060	REP	20	LAST	1416	07,3701	7 0103 1		MASK	FLAGWRD7
0061	REP	21	LAST	1416	07,3702	54 103 1		TS	FLAGWRD7
0062	REP	2	LAST	1416	07,3703	0 3626 0		TC	ACCEPTUP
A0063									
0064	REP	22	LAST	1418	07,3704	4 0103 1	TMFAIL2	CS	FLAGWRD7
0065	REP	51	LAST	1416	07,3705	7 4707 1		MASK	BIT4
0066	REP	23	LAST	1416	07,3706	26 103 1		ADS	FLAGWRD7
0067	REP	50	LAST	1416	07,3707	0 5222 0		TC	RESUME
0069	REP	6	LAST	1418	07,3710	6 0073 0	UPTTEST	AD	KEYTEMP1

TIME IS SNATCHED IN RUPT FOR NOUN 65.

TURN ON UPACT LIGHT
(BIT 3 OF CHANNEL 11)TEST FOR TRIPLE CHAR REDUNDANCY
LOW5 OF WORD
LOW5 INTO KEYTEMP1

SHIFT RIGHT 5

MID 5

SHIFT RIGHT 5
HIGH 5CODE IS GOOD. IF CODE = "ERROR RESET",
CLEAR UPLOCKFL (SET BIT4 OF FLAGWRD7 = 0)
IF CODE DOES NOT = "ERROR RESET", ACCEPT
CODE ONLY IF UPLOCKFL IS CLEAR (=0).

TEST UPLOCKFL FOR 0 OR 1.

UPLOCKFL = 1
UPLOCKFL = 0CLEAR UPLOCKFL (I.E., SET BIT4 OF
FLAGWRD7 = 0)CODE IS BAD
LOOK OUT FURTHER UPLINK ACTIVITY
(BY SETTING UPLOCKFL = 1) UNTIL
"ERROR RESET" IS SENT VIA UPLINK.



L KEYRUPT, UPRUPT

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0070	REF 391	LAST 1418	07,3711	10 000 0	CCS	A
0071	REF 1		07,3712	0 3704 1	TC	TMFAIL2
0072			07,3713	77740 1	OCT	77740
0073	REF 2	LAST 1418	07,3714	0 3704 1	TC	TMFAIL2
0074	REF 330	LAST 1418	07,3715	0 0002 0	TC	0
0075			07,3716	00022 1	ELRCODE	OCT 22

R0076 *UPLINK ACTIVITY LIGHT* IS TURNED OFF BY

- R0077 1. VBRELDSP
R0078 2. ERROR RESET
R0079 3. UPDATE PROGRAM(P27) ENTERED BY V70,V71,V72,AND V73.

R0080 THE RECEPTION OF A BAD CODE(I.E. CCC FAILURE) LOCKS OUT FURTHER UPLINK ACTIVITY BY SETTING BIT4 OF FLAGWRD7 = 1.
R0081 THIS INDICATION WILL BE TRANSFERRED TO THE GROUND BY THE DOWNLINK WHICH DOWNLINKS ALL FLAGWORDS.
R0083 WHEN UPLINK ACTIVITY IS LOCKED OUT, IT CAN BE ALLOWED WHEN THE GROUND UPLINKS AND *ERROR RESET* CODE.
R0085 (IT IS RECOMMENDED THAT THE *ERROR LIGHT RESET* CODE IS PRECEDED BY 16 BITS THE FIRST OF WHICH IS 1 FOLLOWED
R0087 BY 15 ZEROS. THIS WILL ELIMINATE EXTRANEOUS BITS FROM INLINK WHICH MAY HAVE BEEN LEFT OVER FROM THE ORIGINAL
R0089 FAILURE)
R0091 UPLINK ACTIVITY IS ALSO ALLOWED(UNLOCKED) DURING FRESH START WHEN FRESH START SETS BIT4 OF FLAGWRD7 = 0.
R0092



L DISPLAY INTERFACE ROUTINES

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R0001 DISPLAYS CAN BE CLASSIFIED INTO THE FOLLOWING CATEGORIES-

- R0002 1. PRIORITY DISPLAYS- DISPLAYS WHICH TAKE PRIORITY OVER ALL OTHER DISPLAYS. USUALLY THESE DISPLAYS ARE SENT
R0004 OUT UNDER CRITICAL ALARM CONDITIONS.
R0005 2. EXTENDED VERB DISPLAYS- ALL EXTENDED VERBS AND MARK ROUTINES SHOULD USE EXTENDED VERB (MARK) DISPLAYS.
R0007 3. NORMAL DISPLAYS- ALL MISSION PROGRAM DISPLAYS WHICH INTERFACE WITH THE ASTRONAUT DURING THE NORMAL
R0009 SEQUENCE OF EVENTS.
R0010 4. MISC. DISPLAYS- ALL DISPLAYS NOT HANDLED BY THE DISPLAY INTERFACEROUTINES. THESE INCLUDE SUCH DISPLAYS AS
R0012 MM DISPLAYS AND SPECIAL PURPOSE DISPLAYS HANDLED BY PINBALL.
R0013 5. ASTRONAUT INITIATED DISPLAYS- ALL DISPLAYS INITIATED EXTERNALLY.
R0014 THE FOLLOWING TERMS ARE USED TO DESCRIBE THE STATUS OF DISPLAYS-

- R0015 1. ACTIVE-THE DISPLAY WHICH IS (1) BEING DISPLAYED TO THE ASTRONAUT AND WAITING FOR A RESPONSE OR
R0017 (2) WAITING FIRST IN LINE FOR THE ASTRONAUT TO FINISH USING THE DSKY OR (3) BEING DISPLAYED ON THE DSKY
R0019 BUT NOT WAITING FOR A RESPONSE.
R0020 2. INACTIVE -A DISPLAY WHICH HAS (1) BEEN ACTIVE BUT WAS INTERRUPTEDBY A DISPLAY OF HIGHER PRIORITY,
R0022 (2) BEEN PUT INTO THE WAITING LIST AT TIME IT WAS REQUESTED DUE TO THE FACT A HIGHER PRIORITY DISPLAY
R0024 WAS ALREADY GOING, (3) BEEN INTERRUPTED BY THE ASTRONAUT (CALLED A PINBRANCH CONDITION, SINCE THIS TYPE
R0026 OF INACTIVE DISPLAY IS USUALLY REACTIVATED ONLY BY PINBALL) OR (4) A DISPLAY WHICH HAS FINISHED BUT STILL
R0028 HAS INFO SAVED FOR RESTART PURPOSES.
R0029 DISPLAY PRIORITIES WORK AS FOLLOWS-

R0030 INTERRUPTS-

- R0031 1. THE ASTRONAUT CAN INTERRUPT ANY DISPLAY WITH AN EXTERNAL DISPLAY REQUEST.
R0033 2. INTERNAL DISPLAYS CAN NOT BE SENT OUT WHEN THE ASTRONAUT IS USING THE DSKY.
R0035 3. PRIORITY DISPLAYS INTERRUPT ALL OTHER TYPES OF INTERNAL DISPLAYS. A PRIORITY DISPLAY INTERRUPTING ANOTHER
R0037 PRIORITY DISPLAY WILL CAUSE AN ABORT UNLESS BIT14 IS SET FOR THE LINUS ROUTINE.
R0039 4. A MARK DISPLAY INTERRUPTS ANY NORMAL DISPLAY.
R0040 5. A MARK THAT INTERRUPTS A MARK COMPLETELY REPLACES IT.

R0041 ORDER OF WAITING DISPLAYS-

- R0042 1. ASTRONAUT EXTERNAL USE
R0043 2. PRIORITY
R0044 3. INTERRUPTED MARK
R0045 4. INTERRUPTED NORMAL

- R0046 5. MARK TO BE REQUESTED (SEE DESCRIPTION OF ENDMARK)
R0047 6. MARK WAITING
R0048 7. NORMAL WAITING

L DISPLAY INTERFACE ROUTINES

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P0049 THE DISPLAY ROUTINES ARE INTENDED TO SERVE AS AN INTERFACE BETWEEN THE USER AND PINBALL. THE
R0051 FOLLOWING STATEMENTS CAN BE MADE ABOUT NORMAL DISPLAYS AND PRIORITY DISPLAYS (A DESCRIPTION OF MARK ROUTINES
R0053 WILL FOLLOW LATER)'

- R0054 1. ALL ROUTINES THAT END IN R HAVE AN IMMEDIATE RETURN TO THE USER. FOR ALL FLASHING DISPLAYS THIS RETURN
- R0056 IS TO THE USERS CALL CADR +4. FOR THE ONLY NON FLASHING IMMEDIATE RETURN DISPLAY (GODSPR) THIS RETURN
- R0058 IS TO THE USERS CALLING LOC +1.
- R0059 2. ALL ROUTINES NOT ENDING IN R DO NOT DO AN IMMEDIATE RETURN TO THE USER.
- R0061 3. ALL ROUTINES THAT END IN R START A SEPARATE JOB (MAKEPLAY) WITH USERS JOB PRIORITY.
- R0063 4. ALL ROUTINES NOT ENDING IN R BRANCH DIRECTLY TO MAKEPLAY WHICH MAKES THESE DISPLAYS A PART OF THE
- R0065 USERS JOB.
- R0066 5. ALL DISPLAY ROUTINES ARE CALLED VIA BANKCALL.
- R0067 6. TO RESTART A DISPLAY THE USER WILL GENERALLY USE A PHASE OF ONE WITH DESIRED RESTART GROUP (SEE
- R0069 DESCRIPTION OF RESTARTS).
- R0070 7. ALL FLASHING DISPLAYS HAVE 3 RETURNS TO THE USER FROM ASTRONAUT RESPONSES. A TERMINATE (V34) BRANCHES
- R0072 TO THE USERS CALL CADR +1. A PROCEED (V33) BRANCHES TO THE USERS CALL CADR +2. AN ENTER OR RECYCLE
- R0074 (V32) BRANCHES TO THE USERS CALL CADR +3.
- R0075 8. ALL ROUTINES MUST BE USED UNDER EXECUTIVE CONTROL.

R0076 A DESCRIPTION OF EACH ROUTINE WITH AN EXAMPLE FOLLOWS'

R0077 GODSP IS USED TO DISPLAY A VERB NOUN ARRIVING IN A. NO RETURN IS MADE TO THE USER.

R0079 1. GODSP IS NOT RESTARTABLE
R0080 2. A VERB PASTE WITH GODSP ALWAYS TURNS ON THE FLASH.
A0081 CAP V000YY
A0082 TC BANKCALL
A0083 CADR GODSP

A0084 V000YY OCT 000YY

R0085 GODSPR IS THE SAME AS GODSP ONLY RETURN IS TO THE USER.

A0086 CAP V000YY
A0087 TC BANKCALL
A0088 CADR GODSPR

A0089 IMMEDIATE RETURN OF GODSPR

R0090 GOFASH DISPLAYS A FLASHING VERB NOUN WITH NO IMMEDIATE RETURN TO THE USER. 3 RETURNS ARE POSSIBLE FROM
R0092 THE ASTRONAUT (SEE NO. 7 ABOVE).

A0093 CAP V000YY V00 NYY WILL BE A FLASHING VERB NOUN.
A0094 TC BANKCALL
A0095 CADR GOFASH
A0096 TERMINATE RETURN
A0097 PROCEED RETURN
A0098 ENTER OR RECYCLE RETURN

R0099 GOPERF1 IS ENTERED WITH DESIRED CHECKLIST VALUE IN A. GOPERF1 WILL DISPLAY THIS VALUE IN R1 BY MEANS OF A



L DISPLAY INTERFACE ROUTINES

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R0101 V01 N25.A FLASHING PLEASE PERFORM ON CHECKLIST (V50 N25) IS THEN DISPLAYED. NO IMMEDIATE RETURN IS MADE TO
R0103 USER (SEE NO. 7 ABOVE).

R0104 GOPERF1 BLANKS REGISTERS R2 AND R3

A0105	CAP	OCTOX	CODE FOR CHECKLIST VALUE XX
A0106	TC	BANKCALL	
A0107	CADR	GOPERF1	
A0108	...	...	TERMINATE RETURN
A0109	...	...	PROCEED RETURN
A0110	...	...	ENTER RETURN

R0111 GOPERF2 IS ENTERED WITH A VARIABLE NOUN AND V01 (V00 FOR N10 OR N11) IN A. GOPERF2 WILL FIRST DISPLAY THE
R0113 REQUESTED NOUN BY MEANS OF A V01NYY OR A V00NYY. PLEASE PERFORM ON NOUN (V50 NYY) THEN BECOMES A FLASHING
R0115 DISPLAY. NO IMMEDIATE RETURN IS MADE TO THE USER (SEE NO. 7 ABOVE).

R0116 GOPERF2 DOES NOT BLANK ANY REGISTERS

A0117	CAP	V00NYY	VARIABLE NOUN YY. XX=00 OR 01.
A0118	TC	BANKCALL	
A0119	CADR	GOPERF2	
A0120	...	...	TERMINATE RETURN
A0121	...	...	PROCEED RETURN
A0122	...	...	ENTER RETURN

R0123 GOPERF3 IS USED FOR A PLEASE PERFORM ON A PROGRAM NUMBER. THE DESIRED PROGRAM NO. IS ENTERED IN A. GOPERF3
R0125 DISPLAYS THE NO. BY MEANS OF A V06 N07 FOLLOWED BY A FLASHING V50 N07 FOR A PLEASE PERFORM. NO IMMEDIATE RETURN
R0127 IS MADE TO THE USER (SEE NO. 7 ABOVE).

R0128 GOPERF3 BLANKS REGISTERS R2 AND R3

A0129	CAP	DECOX	REQUEST PERFORM ON PIX
A0130	TC	BANKCALL	
A0131	CADR	GOPERF3	
A0132	...	...	TERMINATE RETURN
A0133	...	...	PROCEED RETURN
A0134	...	...	ENTER RETURN

R0135 GOPERF4 IS USED FOR A PLEASE PERFORM ON AN OPTION. THE DESIRED OPTION IS ENTERED IN A AND STORED IN OPTION1.
R0137 GOPERF4 DISPLAYS R1 AND R2 BY MEANS OF A V04N06 FOLLOWED BY A FLASHING V50N06 FOR A PLEASE PERFORM. NO
R0139 IMMEDIATE RETURN IS MADE TO THE USER (SEE NO. 7 ABOVE).

A0140	CAP	OCTOX	REQUEST PERFORM ON OPTION XX
A0141	TC	BANKCALL	
A0142	CADR	GOPERF4	
A0143	...	...	TERMINATE RETURN
A0144	...	...	PROCEED RETURN
A0145	ENTER RETURN

R0146 GOPERF4 BLANKS REGISTER R3



L DISPLAY INTERFACE ROUTINES

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R0147 GODSPRET IS USED TO DISPLAY A VERB NOUN ARRIVING IN A WITH A RETURN TO THE USER AFTER THE DISPLAY HAS BEEN SENT
R0149 OUT.

A0150 CAP V00NYY
A0151 TC BANKCALL
A0152 CADR GODSPRET

A0153 RETURN TO USER

R0154 REGODSP IS USED TO DISPLAY A VERB NOUN ARRIVING IN A. REGODSP IS THE SAME AS GODSP ONLY REGODSP REPLACES ANY
R0156 ACTIVE NORMAL DISPLAY IF ONE WAS ACTIVE.

A0157 CAP V00NYY
A0158 TC BANKCALL
A0159 CADR REGODSP

R0160 REPLASH IS THE SAME AS GOFLASH ONLY REPLASH REPLACES ANY ACTIVE NORMAL DISPLAY IF ONE WAS ACTIVE.

A0162 CAP V00NYY V00 NYY WILL BE A FLASHING VERB NOUN
A0163 TC BANKCALL
A0164 CADR REPLASH

A0165 TERMINATE RETURN
A0166 PROCEED RETURN
A0167 ENTER RETURN

A0168 GOFLASHR IS SAME AS GOFLASH ONLY AN IMMEDIATE RETURN IS MADE TO THE USERS CALL CADR +4.

A0170 CAP V00NYY
A0171 TC BANKCALL
A0172 CADR GOFLASHR
A0173 TERMINATE RETURN
A0174 PROCEED RETURN
A0175 ENTER OR RECYCLE RETURN
A0176 IMMEDIATE RETURN FROM GOFLASHR

R0177 GOPERF1R IS THE SAME AS GOPERF1 ONLY GOPERF1R HAS AN IMMEDIATE RETURN TOUSERS CALL CADR +4.

R0179 GOPERF1R BLANKS REGISTERS R2 AND R3

A0180 CAP C0TDX CODE FOR CHECKLIST VALUE XX.
A0181 TC BANKCALL
A0182 CADR GOPERF1R
A0183 TERMINATE RETURN
A0184 PROCEED RETURN
A0185 ENTER RETURN

A0186 IMMEDIATE RETURN FROM GOPERF1R

R0187 GOPERF2R IS THE SAME AS GOPERF2 ONLY AN IMMEDIATE RETURN IS MADE TO USERS CALL CADR +4.



L DISPLAY INTERFACE ROUTINES

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R0189 GOPERF2R DOES NOT BLANK ANY REGISTERS

A0190	CAP	VXXNYY	VARIABLE NOUN YY REQUESTED. XX=00 OR 01
A0191	TC	BANKCALL	
A0192	CADR	GOPERF2R	
A0193	...	...	TERMINATE RETURN
A0194	...	...	PROCEED RETURN
A0195	...	...	ENTER RETURN
A0196	...	...	IMMEDIATE RETURN HERE FROM GOPERF2R

R0197 GOPERF3R IS THE SAME AS GOPERF3 ONLY AN IMMEDIATE RETURN IS MADE TO USERS CALL CADR +4.

R0199 GOPERF3R BLANKS REGISTERS R2 AND R3

A0200	CAP	PROGXX	PERFORM PROGRAM XX
A0201	TC	BANKCALL	
A0202	CADR	GOPERF3R	
A0203	...	...	TERMINATE RETURN
A0204	...	...	PROCEED RETURN
A0205	...	...	ENTER RETURN
A0206	...	...	GOPERF3R IMMEDIATELY RETURNS HERE

R0207 GOPERF4R IS THE SAME AS GOPERF4 ONLY AN IMMEDIATE RETURN IS MADE TO USERS CALL CADR +4.

A0209	CAP	OPTXX	REQUEST PERFORM ON OPTIONXX
A0210	TC	BANKCALL	
A0211	CADR	GOPERF4R	
A0212	...	...	TERMINATE RETURN
A0213	...	...	PROCEED RETURN
A0214	...	...	ENTER RETURN
A0215	...	...	IMMEDIATE RETURN TO USER

R0216 GOPERF4R BLANKS REGISTER R3

R0217 REPLASHR IS THE SAME AS REFLASH ONLY AN IMMEDIATE RETURN IS MADE TO THE USERS CALL CADR +4.

A0219	CAP	VXXNYY	VXX NYY WILL BE A FLASHING VERB NOUN
A0220	TC	BANKCALL	
A0221	CADR	REFLASHR	
A0222	...	...	TERMINATE RETURN
A0223	...	...	PROCEED RETURN
A0224	...	...	ENTER RETURN
A0225	...	...	IMMEDIATE RETURN TO USER

R0226 REGODSPR IS THE SAME AS REGODSP ONLY A RETURN (IMMEDIATE) IS MADE TO THE USER.



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A0228
A0229
A0230

CAP VOONYY
TC BANKCALL
CADR REGODSPR

A0231

... ..

IMMEDIATE RETURN TO USER

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R0234 GOMDSP = GOMARK

R0238 GOMARKR IS THE SAME AS GOMARK ONLY RETURN IS TO THE USER.

R0239 GOMD SPR = GOMARKR

R0244 GOMARKP DISPLAYS A FLASHING MARK VERB NOUN WITH NO IMMEDIATE RETURN TO THE USER. 3 RETURNS ARE POSSIBLE FROM
R0246 THE ASTRONAUT (SEE NO. 7 ABOVE).

R0247 QOQDSPF = QOMARKP

R0254 GOMARCPR IS THE SAME AS GOMARCP ONLY AN IMMEDIATE RETURN IS MADE TO THE USER CALL CADR +4.

R0256 GONDSPFR = GOMARKFR

R0264 GOMARK1 IS USED FOR A PLEASE PERFORM ON A MARK REQUEST WITH ONLY 1 ASTRONAUT RETURN TO THE USER. NO IMMEDIATE
R0266 RETURN IS MADE. THE DESIRED MARK PLEASE PERFORM VERB AND DESIRED NOUN IS ENTERED IN A. GOMARK1 DISPLAYS R1, R2, R
R0268 MEANS OF A VOSNYY FOLLOWED BY A FLASHING VSXNYY FOR A PLEASE PERFORM. THE ASTRONAUT WILL RESPOND WITH A MARK
R0270 OR MARK REJECT OR AN ENTER. THE ENTER IS THE ONLY ASTRONAUT RESPONSE THAT WILL COME BACK TO THE USER.

A0272	CAP	V5XNYY	X=1,2,3,4	Y= NOUN
A0273	TC	BANKCALL		

L DISPLAY INTERPACE ROUTINES

A0274	CADR	GOMARK1	
A0275	...	...	ENTER RETURN
*** IF BLANKING DESIRED ON NON R ROUTINES, NOTIFY DISPLAYER.			
R0276	GOMARK1R IS THE SAME AS A GOMARK1 ONLY AN IMMEDIATE RETURN IS MADE TO THE USERS CALL CADR +2.		
A0277	CAP	VSXNY	X=1,2,3,4 YY = NOUN
A0279	TC	BANKCALL	
A0280	CADR	GOMARK1R	
A0281			
A0282	...	...	ASTRONAUT ENTER RETURN
A0283	...	...	IMMEDIATE RETURN TO USER
R0284	GOMARK2 IS THE SAME AS GOMARK1 ONLY 3 RETURNS ARE MADE TO THE USER FROM THE ASTRONAUT.		
A0286	CAP	VSXNY	X=1,2,3,4 YY=NOUN
A0287	TC	BANKCALL	
A0288	CADR	GOMARK2	
A0289	...	...	TERMINATE RETURN
A0290	...	...	PROCEED RETURN
A0291	...	...	ENTER RETURN
R0292	GOMARK2R IS THE SAME AS GOMARK1R ONLY 3 ASTRONAUT RETURNS ARE MADE TO THE USER.		
A0294	CAP	VSXNY	X=0,1,2,3,4 YY=NOUN
A0295	TC	BANKCALL	
A0296	CADR	GOMARK2R	
A0297	...	...	TERMINATE RETURN
A0298	...	...	PROCEED RETURN
A0299	...	...	ENTER RETURN
A0300	...	...	IMMEDIATE RETURN TO THE USER
R0301	GOMARK3 IS USED FOR A PLEASE PERFORM ON A MARK REQUEST WITH A 3 COMP. DEC DISPLAY. THE DESIRED MARK PLEASE		
R0303	PERFORM VERR AND NOUN ARE ENTERED IN A. GOMARK3 DISPLAYS R1, R2, R3 BY MEANS OF A V06NYY FOLLOWED BY A FLASHING		
R0305	VSXNY FOR A PLEASE PERFORM. GOMARK3 HAS 3 ASTRONAUT RETURNS TO THE USER WITH NO IMMEDIATE RETURN.		
A0307	CAP	VSXNY	X=1, 2,3,4 YY=NOUN
A0308	TC	BANKCALL	
A0309	CADR	GOMARK3	
A0310	...	...	TERMINATE RETURN
A0311	...	...	PROCEED RETURN
A0312	...	...	ENTER RETURN
R0313	GOMARK4 IS THE SAME AS GOMARK3 ONLY R2 AND R3 ARE BLANKED AND R1 IS DISPLAYED IN OCTAL.		
A0315	CAP	VSXNY	X=1,2,3,4 YY=NOUN
A0316	TC	BANKCALL	
A0317	CADR	GOMARK4	
A0318	TERMINATE RETURN
A0319	PROCEED RETURN



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A0320

ENTER RETURN

R0321 EXDSPRET IS USED TO DISPLAY A VERB NOUN ARRIVING IN A WITH A RETURN MADE TO THE USER AFTER THE DISPLAY HAS BEEN
R0323 SENT OUT.

A0324

CAP V00NYY
TC BANKCALL
CADR EXDSPRET

A0325

A0326

A0327

RETURN TO USER

R0328 KLEENEX CLEANS OUT ALL MARK DISPLAYS (ACTIVE AND INACTIVE). A RETURN IS MADE TO THE USER AFTER THE MARK DISPLAYS
R0330 HAVE BEEN CLEANED OUT.

A0331

TC BANKCALL
CADR KLEENEX

A0332

A0333

RETURN TO USER

R0334 MARKBRAN IS A SPECIAL PURPOSE ROUTINE USED FOR SAVING JOB VAC AREAS (SEE DESCRIPTION OF MARKBRAN BELOW).

A0336

TC BANKCALL
CADR MARKBRAN

A0337

A0338

BAD RETURN IF MARK DISPLAY NOT ACTIVE

A0339

A0340

(GOOD RETURN TO IMMEDIATE RETURN LOC OF
LAST FLASHING MARK R ROUTINE)

R0341 PINBRNCH REESTABLISHES THE LAST ACTIVE FLASHING DISPLAY. IF THERE IS NO ACTIVE FLASHING DISPLAY, THE DSKY IS
R0343 BLANKED AND CONTROL IS SENT TO ENDJOB.

A0344

TC POSTJUMP
CADR PINBRNCH

A0345

R0346 PRICOSP IS USED AS A PRIORITY DISPLAY. IT WILL DISPLAY A GOFASH TYPE DISPLAY WITH THREE POSSIBLE RETURNS FROM
R0348 THE ASTRONAUT (SEE NO. 7 ABOVE).

R0349 THE MAIN PURPOSE OF PRICOSP IS TO REPLACE THE PRESENT DISPLAY WITH A DISPLAY OF HIGHER PRIORITY AND TO
R0351 PROVIDE A MEANS FOR RESTORING THE OLD DISPLAY WHEN THE PRIORITY DISPLAY
R0352 IS RESPONDED TO BY THE ASTRONAUT.

R0353 THE FORMER DISPLAY IS RESTORED BY AN AUTOMATIC BRANCH TO WAKE UP THE DISPLAY THAT WAS INTERRUPTED BY THE
R0355 PRIO DISPLAY.

A0356

CAP V00NYY
TC BANKCALL
CADR PRICOSP

V00NYY WILL BE A FLASHING VERB NOUN

A0357

A0358

A0359

A0360

TERMINATE RETURN
PROCEED RETURN



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P0378 GENERAL INFORMATION

R0379 -----

R0380 ALARM OR ABORT EXIT MODES--

A0381	PRIORIT TC	ABORT
A0382	OCT	1502

R0383 PRIORIT IS BRANCO TO WHEN (1) A NORMAL DISPLAY IS REQUESTED AND ANOTHER NORMAL DISPLAY IS ALREADY ACTIVE
R0385 (REFLASH AND REODSP ARE EXCEPTIONS) OR (2) A PRIORITY DISPLAY IS REQUESTED WHEN ANOTHER PRIORITY DISPLAY IS
R0387 ALREADY ACTIVE (A PRIORITY WITH LINUS BIT14 IS AN EXCEPTION).
R0388 ERASABLE INITIALIZATION REQUIRED--

R0389 ACCOMPLISHED BY FRESH START- 1. FLAGWRD4 (USED EXCLUSIVELY BY DISPLAY INTERFACE ROUTINES)
R0391 2. NVSAVE = NORMAL VERB AND NOUN REGISTER.
R0393 3. EBANKTEM = NORMAL INACTIVE FLAGWORD (ALSO CONTAINS NORMALS EBANK).
R0395 5. R1SAVE = MARKBRAN CONTROL WORD
R0396 4. RESTREG = PRIORITY 30 AND SUPERBANK 3.
R0398 OUTPUT--

R0399 NWORD = PRIO VERB AND NOUN
R0400 NWORD +1(MARKOV) = MARK VERB AND NOUN
R0401 NWORD +2(NVSAVE) = NORMAL VERB AND NOUN

R0402 DSPFLG(EBANKSAV) = PRIO FLAGWORD (INCLUDING EBANK)
R0403 DSPFLG +1(MARKERAN) = MARK FLAGWORD (INCLUDING EBANK)
R0404 DSPFLG +2(EBANKTEM) = NORMAL FLAGWORD (INCLUDING EBANK)

R0405 CADRFLSH = PRIO USERS CALL CADR +1 LOCATION
R0406 CADRFLSH +1(MARKFLSH) = MARK USERS CALL CADR +1 LOCATION
R0407 CADRFLSH +2(TEMPFLSH) = NORMAL USERS CALL CADR +1 LOCATION

R0408 PRIOTIME = TIME EACH PRIO REQUEST FIRST SENT OUT
R0409 OPTION1 = DESIRED OPTION FROM GOPERF4
R0410 FLAGWRD4 = BIT INFO FOR CONTROL OF ALL DISPLAY ROUTINES
R0411 DSPTM1 = R1 INFO FOR ASTRONAUT FROM PERFORM DISPLAYS(NORMAL)
R0412 SUBROUTINES USED-- NVSUB, FLAGUP, FLAGDOWN, ENDOPJOB, BLANKSUB, ABORT, JOBWAKE, JOBSLEEP, FINDVAC, PRIORING,
R0414 JAMTERM, NVSUBUSY, FLASHON, ENDIDLE, CHANG1, BANKJUMP, MAKECADR, NOVAC,
R0415 DEBRIS-- (STORED INTO)

R0416 TEMPORARY TEMPORARIES- A, O, L, MPAC +2, MPAC +3, MPAC +4, MPAC +5, MPAC +6, RUPTREG2, RUPTREG3, CYL,
R0418 EBANK, RUPTREG4, LOC, BANKSET, MODE, MPAC, MPAC +1 4, PACEREG
R0420 ERASABLES(SHARED AND USED WITH OTHER PROGRAMS) CADRSTOR, DSPLIST, LOC, DSPTM1, OPTION1

R0422 ERASABLES(USED ONLY BY DISPLAY ROUTINES)- NWORD,+1,+2, DSPFLG,+1,+2, CADRFLSH,+1,+2, PRIOTIME, FLAGWRD4,



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R0424 R1SAVE, MARK2PAC,
R0425 DEBRIS-- (USED BUT NOT STORED INTO) - NOUNREG, VERBREG, LOCCTR, MONSAVE1
R0426 FLAGWORD DESCRIPTIONS--
R0427 FLAGWORD4- SEE DESCRIPTION UNDER LOG SECTION ERASABLE ASSIGNMENTS

R0428 DSPFLG, DSPFLG+1, DSPFLG +2-

R0429
R0430 BITS 1 BLANK R1
R0431 2 BLANK R2
R0432 3 BLANK R3
R0433 4 FLASHING DISPLAY REQUESTED
R0434 5 PERFORM DISPLAY REQUESTED
R0435 6 ----- EODSPRET GCDSPRET
R0436 7 PRIO DISPLAY -----
R0437 8 ----- DEC MARK PERFORM -----
R0438 9 ERANK
R0439 10 ERANK
R0440 11 ERANK
R0441 12 ----- V99PASTE
R0442 13 2ND PART OF PERFORM
R0443 15 REFLASH OR REDO ----- REFLASH OR REDO
R0444 15 ----- MARK REQUEST -----
R0445 RESTARTING DISPLAYS--

R0446 RULES FOR THE DSKY OPERATOR--

- R0447 1. PROCEED AND TERMINATE SERVE AS RESPONSES TO REQUESTS FOR OPERATOR RESPONSE (FLASHING V/N). AS LONG
R0448 AS THERE IS ANY REQUEST AWAITING OPERATOR RESPONSE, ANY USE OF PROCEED OR TERMINATE WILL SERVE AS
R0449 RESPONSES TO THAT REQUEST. CARE SHOULD BE EXERCISED IN ATTEMPTING TO KILL AN OPERATOR INITIATED MONITOR
R0450 WITH PROCEED AND TERMINATE FOR THIS REASON.
R0451
R0452 2. THE ASTRONAUT MUST RESPOND TO A PRIORITY DISPLAY NO SOONER THAN 5 SECS FROM THE TIME THE MISSION
R0453 PROGRAM SENT OUT THE REQUEST FOR OPERATOR RESPONSE (THE ASTRONAUT WOULD SEE THIS DISPLAY FOR LESS TIME
R0454 DUE TO TIME IT TAKES TO GET DISPLAY SENT OUT.) IF THE ASTRONAUT RESPONDS TOO SOON, THE PRIORITY DISPLAY
R0455 IS SENT OUT AGAIN--AND AGAIN UNTIL AN ACCUMULATED 5 SECS FROM TIME THE FIRST PRIORITY DISPLAY WAS SENT
R0456 OUT. THE SAME 5 SEC. DELAY WILL OCCUR AT 163.84 SECS OR IN ANY MULTIPLE OF THAT TIME DUE TO PROGRAM
R0457 CONSIDERATION.
R0458
R0459 3. KEY RELEASE BUTTON--
R0460 A) IF THE KEY RELEASE LIGHT IS ON, IT SIMPLY RELEASES THE KEYBOARD AND DISPLAY FOR INTERNAL USE.
R0461 B) IF THE KEY RELEASE LIGHT IS OFF, AND IF SOME REQUEST FOR OPERATOR RESPONSE (FLASHING V/N) IS STILL
R0462 AWAITING RESPONSE THEN IT RE-ESTABLISHES THE DISPLAYS THAT ORIGINALLY REQUESTED RESPONSE.
R0463 IF AN OPERATOR WANTS THEREFORE TO RE-ESTABLISH BUT CONDITION (A) IS ENCOUNTERED, A SECOND DEPRESSION OF
R0464 KEY RELEASE BUTTON MAY BE NECESSARY.
R0465
R0466 4. IT IS IMPORTANT TO ANSWER ALL REQUESTS FOR OPERATOR RESPONSE.
R0467
R0468 5. IT IS ALWAYS GOOD PRACTICE TO TERMINATE AN EXTENDED VERB BEFORE ASKING FOR ANOTHER ONE OR THE SAME ONE
R0469 OVER AGAIN.
R0470 SPECIAL CONSIDERATIONS--

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- R0480 1. MPAC +2 SAVED ONLY IN MARK DISPLAYS
- R0481 2. GODSP(R), REGODSP(R), GOMARK(R) ALWAYS TURN ON THE FLASH IF ENTERED WITH A PASTE VERB REQUEST.
- R0483 3. ALL NORMAL DISPLAYS ARE RESTARTABLE EXCEPT GODSP(R), REGODSP(R)
- R0484 4. ALL EXTENDED VERBS WITH DISPLAYS SHOULD START WITH A TC TESTXACT AND FINISH WITH A TC ENDEXT.
- R0485 5. GODSP(R) AND REGODSP(R) MUST BE IN THE SAME EBANK AND SUPERBANK AS THE LAST NORMAL DISPLAY RESTARTED
- R0486 BY A .1 RESTART PHASE CHANGE.
- R0488 6. IN ORDER TO SET UP A NON DISPLAY .1 RESTART POINT, THE USER MUST MAKE CERTAIN THAT RESTREG CONTAINS THE
- R0489 CORRECT PRIORITY AND SUPERBANK AND THAT EBANKTEM CONTAINS THE CO
- R0491 7. IF CLEANDSP IS RESTARTED VIA A .1 PHASE CHANGE, CAP ZERO SHOULD BE EXECUTED BEFORE THE TC BANKCALL.
- R04911

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P0492 CALLING SEQUENCE FOR BLANKING

A0493
A0494
A0495

CAP BITX
TC BLANKET
... ..

X=1,2,3 BLANK R1,R2,R3 RESPECTIVELY

RETURN TO USER HERE

R0496 IN ORDER TO USE BLANKET CORRECTLY THE USER MUST USE A DISPLAY ROUTINE THAT ENDS IN R FIRST FOLLOWED BY THE CALL
R0498 TO BLANKET AT THE IMMEDIATE RETURN LOC.

0499 5415 BLOCK 02
0500 REP 1 4000 SETLOC PPTAG4
0501 5415 BANK

0502 REP 1 COUNT 02/DSPLA

0503 REP 702 LAST 1417 5415 54 182 0 BLANKET TS MPAC +8
0504 REP 1 5416 4 0180 1 CS PLAYTEM4
0505 REP 703 LAST 1433 5417 7 0182 0 MASK MPAC +8
0506 REP 704 LAST 1433 5420 50 181 1 INDEX MPAC +5
0507 REP 2 LAST 1433 5421 28 180 1 ADS PLAYTEM4

0508 REP 331 LAST 1419 5422 0 0002 0 TC 0

0511 REP 63 LAST 1410 5423 0 4574 0 ENDMARK TC POSTJUMP
0512 REP 1 5424 20457 0 CADR MARKEND

05121 REP 289 LAST 1418 5425 3 4714 1 CLEARMRK CAP ZERO
05122 REP 20 LAST 688 5426 55=044 1 TS EXTIVBACT

05123 5427 0 0004 0 INHINT
05124 REP 61 LAST 1408 5430 4 4712 0 CS BIT1
05125 REP 5 LAST 385 5431 7 0100 1 MASK FLAGWRD4
05126 REP 6 LAST 1433 5432 54 100 1 TS FLAGWRD4

05127 5433 0 0003 1 RELINT
05128 REP 332 LAST 1433 5434 0 0002 0 TC 0

R0513 ***ALL EXTENDED VERB ROUTINES THAT HAVE AT LEAST ONE FLASHING DISPLAY MUST TCF ENDMARK OR TCF ENDEXT WHEN
R0515 FINISHED.

0516 10,2457 BANK 10
0517 REP 1 10,2000 SETLOC DISPLAYS
0518 10,2457 BANK

0519 REP 1 COUNT 10/DSPLA

R0520 NTERONLY IS USED TO DIFFERENTIATE THE MARK ROUTINE WITH ONLY ONE RETURN TO THE USER FROM THE MARKING ROUTINE WIT
R0522 3 RETURNS TO THE USER. THIS ROUTINE IS ONLY USED BY GOMARK1 AND GOMARK1R.

05291 REP 6 LAST 744 10,2457 0 5425 1 MARKEND TC CLEARMRK
05297 REP 1 10,2460 1 3547 0 TCF MARKOVER



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0530	REP	1		10,2461	54 155 1	GOMARK	TS	PLAYTEM1	ENTRANCE FOR MARK GODSP
0531	REP	54	LAST 1417	10,2482	3 4674 0	GOMARS	CAP	BIT15	BIT15 SET FOR ALL MARK REQUESTS
0532	REP	1		10,2463	1 2828 0		TCP	GOFLASH2	
0533	REP	270	LAST 1433	10,2484	3 4714 1	KLEENEX	CAP	ZERO	CLEAN OUT EXTENDED VERBS
0534	REP	2	LAST 1434	10,2485	54 155 1	GOMARKP	TS	PLAYTEM1	ENTRANCE FOR MARK GOFLASH
0535	REP	1		10,2466	3 3157 1		CAP	MARKPMSK	MARK, FLASH
0536	REP	2	LAST 1434	10,2467	1 2828 0		TCP	GOFLASH2	
0539	REP	3	LAST 1434	10,2470	54 155 1	GOMARK2	TS	PLAYTEM1	MARK GOPERFS-3 AST. RETURNS
0540	REP	1		10,2471	3 3848 0	MARKFORM	CAP	MPERFMSK	MARK, PERFORM, FLASH
0541	REP	3	LAST 1434	10,2472	1 2828 0		TCP	GOFLASH2	
0542	REP	4	LAST 1434	10,2473	54 155 1	GOMARK3	TS	PLAYTEM1	USED FOR 3COMP DECIMAL PERFORM
0543	REP	1		10,2474	3 3833 1		CAP	MARK3MSK	
0544	REP	4	LAST 1434	10,2475	1 2828 0		TCP	GOFLASH2	
0545	REP	5	LAST 1434	10,2476	54 155 1	GOMARK4	TS	PLAYTEM1	
0546	REP	1		10,2477	3 3834 0		CAP	MARK4MSK	MARK, PERFORM, FLASH, BLANK
0547	REP	5	LAST 1434	10,2500	1 2828 0		TCP	GOFLASH2	
0548	REP	6	LAST 1434	10,2501	54 155 1	GOMARKR	TS	PLAYTEM1	ENTRANCE FOR MARK GODSPR
0549	REP	55	LAST 1434	10,2502	3 4874 0		CAP	BIT15	
0550	REP	1		10,2503	1 2804 0		TCP	GODSPR2	
0551	REP	7	LAST 1434	10,2504	54 155 1	GOMARKPR	TS	PLAYTEM1	ENTRANCE FOR MARK GOFLASHR
0552	REP	2	LAST 1434	10,2505	3 3157 1		CAP	MARKPMSK	
0553	REP	1		10,2506	1 2785 0		TCP	GODSPRS	
0559	REP	8	LAST 1434	10,2507	54 155 1	GOMARK2R	TS	PLAYTEM1	MARK GOPERFS-3 AST. RETS+ IMMEDIATE RET.
0560	REP	2	LAST 1434	10,2510	3 3848 0		CAP	MPERFMSK	MARK, PERFORM, FLASH
0561	REP	2	LAST 1434	10,2511	1 2785 0		TCP	GODSPRS	
05611	REP	9	LAST 1434	10,2512	54 155 1	GOMARK3R	TS	PLAYTEM1	
05612	REP	2	LAST 1434	10,2513	3 3833 1		CAP	MARK3MSK	
05613	REP	3	LAST 1434	10,2514	1 2785 0		TCP	GODSPRS	
0562	REP	183	LAST 1408	10,2515	3 4712 1	MAKEMARK	CAP	ONE	
0563	REP	1		10,2516	0 3083 1		TC	COPIES	
0564	REP	7	LAST 1433	10,2517	3 0100 0		CA	FLAGWRD4	IS NORM OR PRIO BUSY OR WAITING
0565	REP	1		10,2520	7 3847 0		MASK	OCT34300	
0566	REP	392	LAST 1419	10,2521	10 000 0		OCS	A	
0567	REP	1		10,2522	1 2580 1		TCP	CHKPRIO	
0568	REP	8	LAST 1434	10,2523	3 0100 0		CA	FLAGWRD4	IS MARK SLEEPING DUE TO ASTRO BUSY

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0568	REP	38	LAST 1411	10,2524	7 4702 1	MASK	BIT9	
0570				10,2525	0 0008 1	EXTEND		
0571	REP	1		10,2526	1 2530 1	BZP	MARKPLAY	NO
0572	REP	110	LAST 1284	10,2527	1 5112 1	TCP	ENDOFJOB	
0594				10,2530	0 0004 0	MARKPLAY	INHINT	
0595	REP	29	LAST 1383	10,2531	4 4715 1	CS	FIVE	RESET MARK OVER NORM, SET MARK
0596	REP	9	LAST 1434	10,2532	7 0100 1	MASK	FLAGWRD4	
05965	REP	164	LAST 1434	10,2533	8 4712 1	AD	ONE	
0597	REP	10	LAST 1435	10,2534	54 100 1	TS	FLAGWRD4	
0598				10,2535	0 0003 1	RELINT		
0599	REP	1		10,2536	4 1070 0	GOOGMARK	CS	MARKFLAG
0600	REP	45	LAST 1415	10,2537	7 4708 0	MASK	BITS	PERFORM
0601	REP	393	LAST 1434	10,2540	10 000 0	CCS	A	
0602	REP	1		10,2541	1 2544 1	TCP	MARKCOP	
0603	REP	1		10,2542	4 0370 1	CS	MARKOV	
0604	REP	2	LAST 1435	10,2543	54 370 1	TS	MARKOV	
0605	REP	165	LAST 1435	10,2544	3 4712 1	MARKCOP	CAP	ONE
0606	REP	1		10,2545	1 2744 0	TCP	PRIOPLAY	MARK INDEX
0607	REP	1		10,2546	3 0185 0	COPYTOGO	CA	MPAC2SAV
0608	REP	705	LAST 1433	10,2547	54 158 1	TS	MPAC +2	
0609	REP	1		10,2550	50 184 1	COPYPACS	INDEX	COPINDEX
0610	REP	1		10,2551	3 3857 0	CAP	PRIOOCT	
0611	REP	1		10,2552	54 182 0	TS	GENMASK	
0612	REP	2	LAST 1435	10,2553	50 184 1	INDEX	COPINDEX	
0613	REP	1		10,2554	3 1087 1	CAP	EBANKSAV	
0614	REP	1		10,2555	54 180 1	TS	TEMPOR2	ACTIVE EBANK AND FLAG
0615	REP	63	LAST 1410	10,2556	54 003 0	TS	EBANK	
0616	REP	333	LAST 1433	10,2557	0 0002 0	TC	0	
R0617	PINCHK CHECKS TO SEE IF THE CURRENT MARK REQUEST IS MADE BY THE ASTRONAUT WHILE INTERRUPTING A GOPLAY DISPLAY							
R0619	(A NORMAL OR A PRIO). IF THE ASTRONAUT TRIES TO MARK DURING A PRIO, THE CHECK FAIL LIGHT GOES ON AND THE MARK							
R0621	REQUEST IS ENDED. IF HE TRIES TO MARK DURING A NORM, THE MARK IS ALLOWED. IN THIS CASE THE NORM IS PUT TO SLEEP							
R0623	UNTIL ALL MARKING IS FINISHED.							
R0624	IF THE MARK REQUEST COMES FROM THE PROGRAM DURING A TIME THE ASTRONAUT IS NOT INTERRUPTING A NORMAL OR A							
R0626	PRIO, THE MARK REQUEST IS PUT TO SLEEP UNTIL THE +RESENT ACTIVE DISPLAY IS RESPONDED TO BY THE ASTRONAUT.							
0628	REP	11	LAST 1435	10,2560	3 0100 0	CHKPRIO	CA	FLAGWRD4
0629	REP	1		10,2561	7 3402 0	MASK	OCT24100	MARK ATTEMPT DURING PRIO
0630	REP	394	LAST 1435	10,2562	10 000 0	CCS	A	
0631	REP	1		10,2563	1 3802 1	TCP	MARSLEEP	



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0632	REF	12	LAST 1435	10,2564	4 0100 1	CS	FLAGWRD4	
0633	REF	35	LAST 1416	10,2565	7 4710 1	MASK	BIT3	SET MARK OVER NORM
0634				10,2566	0 0004 0	INHINT		
0635	REF	13	LAST 1436	10,2567	26 100 1	ADS	FLAGWRD4	
0636	REF	1		10,2570	1 2662 0	TCP	SETNORM	
0637	REF	3	LAST 1435	10,2571	3 0370 0	MARKPERF	CA	MARONV
0638	REF	1		10,2572	7 4160 0	MASK	VERBAMASK	
0639	REF	1		10,2573	1 3246 0	TCP	NVSODSP	
0640	REF	10	LAST 1434	10,2574	54 155 1	GODSP	TS	PLAYTEM1
0641	REF	271	LAST 1434	10,2575	3 4714 1	GODSP2	CAP	ZERO
0642	REF	6	LAST 1434	10,2576	1 2626 0	TCP	GOFLASH2	
0643	REF	11	LAST 1436	10,2577	54 155 1	GODSPRET	TS	PLAYTEM1
0644	REF	55	LAST 1406	10,2600	3 4705 1	CAP	BIT6	ENTRANCE FOR A GODSP WITH A PASTE
0645	REF	7	LAST 1436	10,2601	1 2626 0	TCP	GOFLASH2	SET BIT6 TO GO BACK TO USER AFTER NVSOB
0646	REF	12	LAST 1436	10,2602	54 155 1	GODSPR	TS	PLAYTEM1
0647	REF	272	LAST 1436	10,2603	3 4714 1	GODSPR1	CAP	ZERO
0648	REF	3	LAST 1433	10,2604	54 160 1	GODSPR2	TS	PLAYTEM4
0649	REF	273	LAST 1436	10,2605	3 4714 1	CAP	ZERO	* DONT MOVE
0650	REF	1		10,2606	1 2767 1	TCP	GODSPRS1	
R0651	CLEANDSP IS USED FOR CLEARING OUT A NORMAL DISPLAY THAT IS PRESENTLY ACTIVE OR A NORMAL DISPLAY THAT IS							
R0653	SET UP TO BE STARTED OR RESTARTED.							
R0654	NORMALLY THE USER WILL NOT NEED TO USE THIS ROUTINE SINCE A NEW NORMAL DISPLAY AUTOMATICALLY CLEARS OUT AN							
R0656	OLD DISPLAY.							
R0657	CALLING SEQUENCE FOR CLEANDSP-							
A0658						TC	BANKCALL	
A0659						CADR	CLEANDSP	
0660	REF	274	LAST 1436	10,2607	3 4714 1	CLEANDSP	CAP	ZERO
0661	REF	13	LAST 1436	10,2610	54 155 1	REFLASH	TS	PLAYTEM1
0662	REF	1		10,2611	3 3632 0	CAP	REDOMASK	FLASH AND PERMIT
0663	REF	6	LAST 1436	10,2612	1 2626 0	TCP	GOFLASH2	
0664	REF	14	LAST 1436	10,2613	54 155 1	REFLASHR	TS	PLAYTEM1
0665	REF	2	LAST 1436	10,2614	3 3632 0	CAP	REDOMASK	FLASH AND PERMIT
0666	REF	4	LAST 1434	10,2615	1 2765 0	TCP	GODSPRS	



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0667	REF	15	LAST 1436	10,2616	54 155 1	REODSP	TS	PLAYTEM1
0668	REF	81	LAST 1404	10,2617	3 4675 1		CAP	BIT14
0669	REF	9	LAST 1436	10,2620	1 2626 0		TCF	GOFLASH2
0670	REF	16	LAST 1437	10,2621	54 155 1	REODSPR	TS	PLAYTEM1
0671	REF	62	LAST 1437	10,2622	3 4675 1		CAP	BIT14
0672	REF	2	LAST 1434	10,2623	1 2604 0		TCF	GODSPR2
0673	REF	17	LAST 1437	10,2624	54 155 1	GOFLASH	TS	PLAYTEM1
0674	REF	52	LAST 1418	10,2625	3 4707 0		CAP	BIT4
0675	REF	4	LAST 1436	10,2626	54 160 1	GOFLASH2	TS	PLAYTEM4
0676	REF	1		10,2627	0 3050 1		TC	SAVELOCS
0677				10,2630	0 0003 1		RELINT	
0678	REF	1		10,2631	1 2674 1		TCF	MAKEPLAY
0679	REF	16	LAST 1437	10,2632	54 155 1	PRIODSPR	TS	PLAYTEM1
0680	REF	1		10,2633	3 3651 0		CAP	BITST+4
0681	REF	5	LAST 1436	10,2634	1 2765 0		TCF	GODSPRS
0682	REF	19	LAST 1437	10,2635	54 155 1	PRIODSP	TS	PLAYTEM1
0683	REF	2	LAST 1437	10,2636	3 3651 0	SETPRIO	CAP	BITST+4
0684	REF	10	LAST 1437	10,2637	1 2626 0		TCF	GOFLASH2
0685	REF	275	LAST 1436	10,2640	3 4714 1	MAKEPRIO	CAP	ZERO
0686	REF	3	LAST 1435	10,2641	54 164 0		TS	COPINDEX
0687	REF	1		10,2642	0 3522 1		TC	LINUSCHR
0688	REF	1		10,2643	1 2650 1		TCF	HIPRIO
0689	REF	14	LAST 1436	10,2644	3 0100 0		CA	FLAGWRD4
0690	REF	1		10,2645	7 3670 1		MASK	OCT20100
0691	REF	395	LAST 1435	10,2646	10 000 0		CCS	A
0692	REF	1		10,2647	1 2723 1		TCF	PRIORORT
0693	REF	15	LAST 1437	10,2650	3 0100 0	HIPRIO	CA	FLAGWRD4
0694	REF	1		10,2651	7 5612 0		MASK	OCT40400
0695				10,2652	0 0006 1		EXTEND	
0696	REF	1		10,2653	1 2656 1		BZF	ASKIPNR4
0697	REF	276	LAST 1437	10,2654	3 4714 1	SEIMARK	CAP	ZERO
0698	REF	1		10,2655	1 3122 1		TCF	JOBXCHS
0699	REF	16	LAST 1437	10,2656	3 0100 0	ASKIPNR4	CA	FLAGWRD4

LEAVE ONLY FLASH BIT SET

BRANCH DIRECT WITH NO SEPARATE JOB CALL

LINUS RETURN

IS PRIO IN ENDIDLE OR BUSY

YES, ABORT

MARK ACTIVE

NO

NORMAL ACTIVE



L DISPLAY INTERFACE ROUTINES

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0700	REP	1		10,2657	7 3866 0	MASK	OCT10200	BITS 13+8
0701				10,2660	0 0006 1	EXTEND		
0702	REP	1		10,2661	1 2664 0	BZF	QKTOCOPY	NO
0703	REP	166	LAST 1435	10,2662	3 4712 1	SETNORM	CAP	ONE
0704	REP	2	LAST 1437	10,2663	1 3122 1	TCP	TC	JOBXCHS
0705	REP	1		10,2664	0 3062 0	QKTOCOPY	TC	COPYNORM
0706	REP	1		10,2665	0 3333 1	TC	TC	WITCHONE
0707	REP	8	LAST 1407	10,2666	0 5074 1	TC	TC	JOBWAKE
0708	REP	1		10,2667	0 3350 1	TC	TC	XCHTOEND
0709	REP	22	LAST 1384	10,2670	3 0025 0	REDOPRIO	CA	TIME1
0710	REP	1		10,2671	55=147 0	TS	TS	SAVE TIME PRIODSP SENT OUT
0711	REP	277	LAST 1437	10,2672	3 4714 1	KEEPPRIO	CAP	ZERO
0712	REP	2	LAST 1435	10,2673	1 2744 0	TC	TC	PRIORPLAY
0713	REP	28	LAST 1410	10,2674	3 0167 1	MAKEPLAY	CA	PRIORITY
07131	REP	3	LAST 1410	10,2675	7 7674 1	MASK	TS	SAVE USERS PRIORITY
07132	REP	1		10,2676	54 163 1	TS	TS	PRI037
07133	REP	1		10,2677	3 7670 1	CAP	TS	USERPRIO
07134	REP	10	LAST 815	10,2700	0 5103 0	TC	TC	PRI033
07135	REP	5	LAST 1437	10,2701	3 0160 0	CA	TC	PRI0CHNG
0714	REP	1		10,2702	7 3650 0	CA	CA	PLAYTEM4
0715	REP	396	LAST 1437	10,2703	10 000 0	MASK	CCS	IS IT MARK OR PRIO OR NORM
0716	REP	1		10,2704	1 2640 0	CCS	CCS	BITS15+7
0717	REP	1		10,2705	1 2707 1	TCP	TCP	A
0718	REP	1		10,2706	1 2515 0	TCP	TCP	MAKEPRIO
0719	REP	75	LAST 1408	10,2707	3 4711 1	TCP	TCP	ITS PRIO
0720	REP	4	LAST 1437	10,2710	54 164 0	IFLEGAL	CA	IPLEGAL
0721	REP	2	LAST 1437	10,2711	0 3522 1	TS	TS	ITS MARK
0722	REP	1		10,2712	1 2725 1	TC	TC	TWO
0723	REP	3	LAST 196	10,2713	4 1071 1	TC	TS	COPINDEX
0724	REP	53	LAST 1437	10,2714	7 4707 1	TCP	CS	LINUSCHR
0725	REP	397	LAST 1438	10,2715	10 000 0	CS	CS	QKTOPLAY
0726	REP	2	LAST 1438	10,2716	1 2725 1	MASK	CCS	EBANKTEM
0727	REP	17	LAST 1437	10,2717	3 0100 0	CCS	CCS	BIT4
0728	REP	1		10,2720	7 3641 0	TCP	TC	A
0729	REP	1		10,2721	0 0006 1	QKTOPLAY	TC	QKTOPLAY
0730	REP	3	LAST 1438	10,2722	1 2725 1	NO	CA	NO
						CA	CA	FLAGWED4
						MASK	MASK	WAS NORM ASLEEP
						EXTEND	EXTEND	ARE ANY NORMS ASLEEP
						BZF	BZF	NO



L DISPLAY INTERFACE ROUTINES

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0731	REP	6	LAST 1410	10,2723	0 5622 1	PRIORORT TC	POODOO	
0732				10,2724	01502 1	OCT	1502	
0733	REP	1		10,2725	0 3084 0	OKTOPLAY TC	COPIES2	
07331	REP	2	LAST 1438	10,2726	3 0163 0	CA	USERPRIO	
07332				10,2727	0 0006 1	EXTEND		
07333	REP	24	LAST 1378	10,2730	04 007 1	ROR	SUPERBPK	
07334	REP	3	LAST 193	10,2731	54 366 0	TS	RESTREQ	
0737	REP	18	LAST 1438	10,2732	3 0100 0	CA	FLAGWRD4	PRIOR OR MARK GOING
0738	REP	1		10,2733	7 3642 0	MASK	PMASK	
0739	REP	398	LAST 1438	10,2734	10 000 0	CCS	A	
0740	REP	1		10,2735	1 3102 0	TCP	GOSLEEPS	YES
0741				10,2736	1 2740 1	TCP	+2	
0742	REP	2	LAST 1439	10,2737	1 3102 0	TCP	GOSLEEPS	MARK GOING
0743	COULD PUT NORM BUSY CHECK HERE TO SAVE TIME							
0744	REP	2	LAST 1438	10,2740	0 3333 1	TC	WITCHONE	IS IT NVSUB BUSY, ENDIDLE OR NOONE
0745	REP	9	LAST 1438	10,2741	0 5074 1	TC	JOBWAKE	
0746	REP	2	LAST 1438	10,2742	0 3350 1	TC	XCHTEND	
0747	REP	76	LAST 1438	10,2743	3 4711 1	PLAYJM1 CAP	TWO	
0748	REP	5	LAST 1438	10,2744	54 164 0	PRIOPLAY TS	COPINDEX	
0749	REP	1		10,2745	1 3216 0	TCP	GOPLAY	
0750	REP	20	LAST 1437	10,2746	54 155 1	EXDSPRET TS	PLAYTEM1	
0751	REP	2	LAST 154	10,2747	3 7703 1	CAP	BIT15+6	
0752	REP	11	LAST 1437	10,2750	1 2626 0	TCP	GOFLASH2	
0753	REP	2	LAST 715	10,2751	55+045 0	GOPERF1 TS	NORMTEM1	STORE DESIRED CHECKLIST VALUE
0754	REP	1		10,2752	3 3824 1	CAP	V01N25	USED TO DISPLAY CHECKLIST VALUE IN R1
0755	REP	21	LAST 1439	10,2753	54 155 1	GOPERF3 TS	PLAYTEM1	
0756	REP	1		10,2754	3 3623 0	CAP	PERFASK	LEAVE ONLY FLASH, PERFORM, BLANKING
0757	REP	12	LAST 1439	10,2755	1 2626 0	TCP	GOFLASH2	
0758	REP	22	LAST 1439	10,2756	54 155 1	GOPERF2 TS	PLAYTEM1	DESIRED VERB-NOUN TO DISPLAY R1,R2,R3
0759	REP	1		10,2757	3 3627 1	CAP	PERF2MSK	
0760	REP	13	LAST 1439	10,2760	1 2626 0	TCP	GOFLASH2	
0764	REP	1		10,2761	0 3043 0	GOPERF4 TC	PURRS4	
0765	REP	14	LAST 1439	10,2762	1 2626 0	TCP	GOFLASH2	



L DISPLAY INTERFACE ROUTINES

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0766	REF	23	LAST 1439	10,2763	54 155 1	GOFLASHR	TS	PLAYTEM1
0767	REF	54	LAST 1438	10,2764	3 4707 0		CAP	BIT4
0768	REF	6	LAST 1438	10,2765	54 160 1	GODSPRS	TS	PLAYTEM4
0769	REF	48	LAST 1403	10,2766	3 6214 0		CAP	THREE
0770				10,2767	0 0004 0	GODSPRS1	INHINT	
0771	REF	9	LAST 1407	10,2770	54 072 0		TS	RUPTRG3
0772	REF	29	LAST 1436	10,2771	3 0167 1		CA	PRIORITY
0773	REF	4	LAST 1436	10,2772	7 7674 1		MASK	PRIO37
0774	REF	11	LAST 1187	10,2773	54 063 0		TS	NEWPRIO
07741	REF	7	LAST 1440	10,2774	3 0160 0		CA	PLAYTEM4
07742	REF	55	LAST 1440	10,2775	7 4707 1		MASK	BIT4
07743	REF	399	LAST 1439	10,2776	10 000 0		CCS	A
07744	REF	1		10,2777	1 3005 0		TCP	VACDSP
07745	REF	12	LAST 1440	10,3000	3 0083 1		CA	NEWPRIO
07746	REF	34	LAST 1417	10,3001	0 5027 1		TC	NOVAC
07747	REF	7	LAST 664	ET,1777			ERANK=	WHOCARES
07748	REF	2	LAST 1437	10,3002	02674 0		2CADR	MAKEPLAY
07748				10,3003	20107 0			
07749	REF	1		10,3004	1 3013 1		TCP	BOTHJOBS
0775	REF	35	LAST 1410	10,3005	3 0006 1	VACDSP	CA	BBANK
0776				10,3008	0 0006 1		EXTEND	
0777	REF	25	LAST 1439	10,3007	04 007 1		ROR	SUPERBANK
0778	REF	228	LAST 1415	10,3010	54 001 1		TS	L
0779	REF	1		10,3011	3 3665 1		CAP	MAKEGEN
0780	REF	3	LAST 411	10,3012	0 5053 1		TC	SPVAC
0781	REF	2	LAST 1437	10,3013	0 3050 1	BOTHJOBS	TC	SAVELOC5
0782				10,3014	0 0006 1		EXTEND	
0783	REF	706	LAST 1435	10,3015	3 0156 0		DCA	MPAC +1
0784	REF	25	LAST 1417	10,3016	50 064 0		INDEX	LOCCTR
0785	REF	707	LAST 1440	10,3017	52 156 1		DXCH	MPAC +1
0786				10,3020	0 0006 1		EXTEND	
0787	REF	708	LAST 1440	10,3021	3 0160 0		DCA	MPAC +3
0788	REF	26	LAST 1440	10,3022	50 064 0		INDEX	LOCCTR
0789	REF	709	LAST 1440	10,3023	52 160 1		DXCH	MPAC +3
0790	REF	27	LAST 1440	10,3024	3 0064 0		CA	LOCCTR
0791	REF	710	LAST 1440	10,3025	54 161 0		TS	MPAC +5
0792	REF	1		10,3026	0 3055 1		TC	SAVELOC6
0793				10,3027	0 0003 1		RELINT	

LEAVE ONLY FLASH BIT SET

IMMEDIATE RETURN IS CALL CADR +4

MAKE DISPLAY ONE HIGHER THAN USER

IS THIS A FLASHING R DISPLAY

YES, MAKE DISPLAY JOB A VAC
NO, MAKE DISPLAY JOB A NOVAC

COPY TEMPS INTO PERMANENT REGISTERS

SAVE NWORD AND USERS MPAC +2

SAVE USERS CADR, FLAGS AND ERANK

L DISPLAY INTERFACE ROUTINES

0794	REP	9	LAST 1372	10,3030	1 4577 1	TCP	BANKJUMP
0795	REP	3	LAST 1439	10,3031	55=045 0	GOPERF1R TS	NORMTEM1
0796	REP	2	LAST 1439	10,3032	3 3624 1	CAP	V01N25
0797	REP	24	LAST 1440	10,3033	54 155 1	GOPERPRS TS	PLAYTEM1
0798	REP	2	LAST 1439	10,3034	3 3623 0	CAP	PERFMSK
0799	REP	6	LAST 1437	10,3035	1 2785 0	TCP	GODSPRS
0800	REP	25	LAST 1441	10,3036	54 155 1	GOPERF2R TS	PLAYTEM1
0801	REP	2	LAST 1439	10,3037	3 3627 1	CAP	PERF2MSK
0802	REP	7	LAST 1441	10,3040	1 2785 0	TCP	GODSPRS
0808	REP	2	LAST 1439	10,3041	0 3043 0	GOPERF4R TC	PURRS4
0807	REP	8	LAST 1441	10,3042	1 2785 0	TCP	GODSPRS
0808	REP	7	LAST 848	10,3043	55=131 1	PURRS4 TS	OPTION1
0809	REP	1		10,3044	3 3630 1	CAP	V04N06
0810	REP	26	LAST 1441	10,3045	54 155 1	TS	PLAYTEM1
0811	REP	1		10,3046	3 3631 0	CAP	PERF4MSK
0812	REP	334	LAST 1435	10,3047	0 0002 0	TC	0
0813				10,3050	0 0004 0	SAVELOC8	INHINT
0815	REP	1		10,3051	4 3640 1	CS	OCT3400
0816	REP	8	LAST 1440	10,3052	7 0160 1	MASK	PLAYTEM4
0817	REP	64	LAST 1435	10,3053	8 0003 1	AD	ERANK
0818	REP	9	LAST 1441	10,3054	54 160 1	TS	PLAYTEM4
0819	REP	335	LAST 1441	10,3055	22 002 0	SAVELOC8	LXCH 0
0820	REP	6	LAST 1409	10,3058	0 4804 1	TC	MAKECADR
0821	REP	1		10,3057	54 157 0	TS	PLAYTEM3
0822	REP	10	LAST 1440	10,3060	6 0072 1	AD	RUPTREG3
0823	REP	229	LAST 1440	10,3061	0 0001 0	TC	L
0824	REP	278	LAST 1438	10,3062	3 4714 1	COPYNORM	CAP ZERO
0825	REP	6	LAST 1439	10,3063	54 184 0	COPIES	TS COPINDEX
0826				10,3064	0 0004 0	COPIES2	INHINT
0827	REP	10	LAST 1441	10,3065	3 0180 0	CA	PLAYTEM4
0828	REP	7	LAST 1441	10,3066	50 164 1	INDEX	COPINDEX
0829	REP	2	LAST 1435	10,3067	55=067 0	TS	ERANKSAV

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CALL CADR +4

DESIRED CHECKLIST VALUE

DISPLAYS CHECKLIST VALUE IN R1

LEAVE ONLY FLASH, PERFORM, BLANKING

DESIRED VERB-NOUN TO DISPLAY R1,R2,R3

DESIRED OPTION CODE

FLASH,PERFORM AND BLANK R3

ERANK BITS

NOT USED FOR NON R ROUTINES

FLAGWORD

EQUIV TO DSPFLG



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L DISPLAY INTERFACE ROUTINES

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0830	REP	1		10,3070	7 3856 0	MASK	CADRMASK
0831				10,3071	0 0006 1	EXTEND	
0832	REP	1		10,3072	1 3076 1	BZF	SKIPADD
0833	REP	2	LAST 1441	10,3073	3 0157 1	CA	PLAYTEM3
0834	REP	8	LAST 1441	10,3074	50 164 1	INDEX	COPINDEX
0835	REP	3	LAST 173	10,3075	54 372 0	TS	CADRFLASH
0836	REP	27	LAST 1441	10,3076	3 0155 0	SKIPADD	CA
0837	REP	9	LAST 1442	10,3077	50 164 1	INDEX	COPINDEX
0838	REP	1		10,3100	54 367 1	TS	MMWORD
0842	REP	1		10,3101	1 3357 1	TCF	RELINTQ
0843	REP	10	LAST 1442	10,3102	50 164 1	GOSLEEPS	INDEX
0844	REP	2	LAST 1435	10,3103	3 3857 0	CA	COPINDEX
0845	REP	1		10,3104	7 3108 1	MASK	PRIOOCT
0846	REP	1		10,3105	0 7717 1	TC	WAITMASK
0847				10,3106	03004 0	WAITMASK	OCT
0848	REP	167	LAST 1438	10,3107	4 4712 0	CS	3004
0849	REP	11	LAST 1442	10,3110	6 0164 1	AD	ONE
0850	REP	1		10,3111	54 154 0	TS	COPINDEX
0851	REP	2	LAST 1442	10,3112	50 154 1	XCHSLEEP	FACEREG
0852	REP	1		10,3113	3 3638 1	CAP	WAKECADR
0853				10,3114	0 0004 0	INHINT	
0854	REP	10	LAST 1439	10,3115	0 5074 1	TC	JOBWAKE
0855	REP	3	LAST 1439	10,3116	0 3350 1	TC	XCHTOEND
0858	REP	3	LAST 1442	10,3117	50 154 1	INDEX	FACEREG
0859	REP	2	LAST 1442	10,3120	3 3638 1	CAP	WAKECADR
0860	REP	7	LAST 1409	10,3121	1 5070 1	TCF	JOBSLEEP
0861	REP	4	LAST 1442	10,3122	54 154 0	JOBXCHS	TS
0862	REP	3	LAST 1439	10,3123	0 3333 1	TC	FACEREG
0863	REP	11	LAST 1442	10,3124	0 5074 1	TC	WITCHONE
0864	REP	5	LAST 1442	10,3125	3 0154 1	CA	JOBWAKE
0865	REP	28	LAST 1440	10,3126	50 064 0	INDEX	FACEREG
0866	REP	6	LAST 1442	10,3127	54 154 0	TS	LOCCTR
0867	REP	1		10,3130	3 3143 1	CAP	FACEREG
0868	REP	1		10,3131	0 3351 0	TC	XCHQADD
0869	REP	7	LAST 1442	10,3132	50 154 1	INDEX	XCHNYLOC
0870	REP	1		10,3133	3 3660 1	CA	FACEREG
0871	REP	1		10,3134	7 3662 1	MASK	MARKOCT
0872	REP	1		10,3135	0 7735 1	TC	IDLESLEP
0873				10,3136	74004 0	IDLEMASK	DOWNENT2

FLASH AND GODSPRET

VERB NOUN

FIND CADR IN JOB AREA

CAUSES AWAKENED JOB TO GO TO END OF JOB

REPLACE SAME CADR BUT NEW JOB AREA

CONTROLS TYPE OF DISPLAY PUT TO SLEEP

* DONT MOVE



L DISPLAY INTERPACE ROUTINES

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0874	REF	8	LAST	1442	10,3137	50 154 1	INDEX	PACEREG	BIT SHOWS PRIO INTERRUPTED NORM OR MARK	
0875	REF	46	LAST	1435	10,3140	3 4706 1	CA	BITS	BITS FOR MARK, BIT4 FOR NORMAL	
0876	REF	22	LAST	1401	10,3141	6 4710 0	AD	FOUR		
0877	REF	2	LAST	1442	10,3142	0 7717 1	TC	UPENT2	FLAG ROUTINE DOES RELINT	
0878	REF	1			10,3143	03112 0	XCHQADD	GENADR	* DONT MOVE	
0879	REF	19	LAST	1439	10,3144	3 0100 0	CA	FLAGWRD4		
0880	REF	36	LAST	1438	10,3145	7 4710 1	MASK	BIT3	IF BIT3 THEN MARK OVER NORM	
0881	REF	400	LAST	1440	10,3146	10 000 0	CCS	A		
0882	REF	2	LAST	1435	10,3147	0 2530 0	GENMARK	TC	USED AS GENADR FOR JOBWAKE	
0883	REF	2	LAST	1438	10,3150	1 2864 0	TCF	MARKPLAY		
								QKTOCOPY		
0884	REF	279	LAST	1441	10,3151	3 4714 1	MARKWAKE	CAP	ZERO	
0885	REF	2	LAST	1435	10,3152	54 160 1	WAKEPLAY	TS	TEMPOR2	
0886	REF	3	LAST	1443	10,3153	50 160 0	INDEX	TEMPOR2		
0887	REF	1			10,3154	3 3852 0	CA	BIT35+11		
0888	REF	23	LAST	1443	10,3155	6 4710 0	AD	FOUR		
0889	REF	2	LAST	1442	10,3156	0 7735 1	TC	DOWNENT2		
0890					10,3157	40010 1	MARKFMSK	OCT	40010 **DONT MOVE	
0891	REF	4	LAST	1443	10,3180	50 180 0	INDEX	TEMPOR2		
0892	REF	3	LAST	1442	10,3181	3 3838 1	CAP	WAKECADR		
0893					10,3182	0 0004 0	INHINT			
0894	REF	12	LAST	1442	10,3183	0 5074 1	TC	JOBWAKE		
0895	REF	1			10,3184	1 3463 1	TCF	ENDRET		
R0896	ALL .1 RESTARTS BRANCH DIRECTLY TO INITDSP. NORMAL DISPLAYS ARE THE ONLY DISPLAYS ALLOWED TO USE .1 RESTARTS									
R0898	INITDSP FIRST RESTORES THE EBANK AND THE SUPERBANK TO THE MOST RECENT NORMAL EBANK AND SUPERBANK.									
R0900	IF THE MOST RECENT NORMAL DISPLAY REQUEST WAS NOT FINISHED, CONTROL IS SENT BACK TO THE LAST NORMAL USER.									
R0902	OTHERWISE THE NORMAL DISPLAY SET UP IN THE NORMAL DISPLAY REGS IS STARTED UP IMMEDIATELY.									
0904	REF	4	LAST	1438	10,3165	3 1071 0	INITDSP	CA	EBANKTEM	RESTORE MOST RECENT NORMAL EBANK
0905	REF	65	LAST	1441	10,3168	54 003 0	TS	EBANK		
0906	REF	4	LAST	1439	10,3167	3 0366 1	CA	RESTREG	SUPERBANK AND JOB PRIORITY	
0907	REF	1			10,3170	0 4668 0	TC	SUPERSW	RESTORE SUPERBANK	
0908	REF	5	LAST	1440	10,3171	7 7674 1	MASK	PRIO37		
0909	REF	11	LAST	1438	10,3172	0 5103 0	TC	PRIOCHNG		
0910	REF	49	LAST	1440	10,3173	4 8214 1	CS	THREE		
0911	REF	4	LAST	612	10,3174	8 0374 1	AD	TEMPPLSH		
0912	REF	10	LAST	1441	10,3175	1 4577 1	TCF	BANKJUMP		
0913					10,3176	0 0003 1	PINBRNCH	RELINT	FOR GOPIN USERS	
09135	REF	1			10,3177	3 1072 0	CA	MARK2PAC	NEEDED TO SAVE MPAC +2 FOR MARK USERS	
0914	REF	711	LAST	1440	10,3200	54 158 1	TS	MPAC +2	ONLY	
0915	REF	20	LAST	1443	10,3201	3 0100 0	CA	FLAGWRD4	PINBRANCH CONDITION	



L DISPLAY INTERFACE ROUTINES

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0916	REP	1		10,3202	7 7707 1	MASK	PINMASK	
0917	REP	401	LAST 1443	10,3203	10 000 0	CCS	A	
0918				10,3204	1 3207 0	TCP	+3	
0919	REP	1		10,3205	1 3817 0	TCP	ERASER	** NOTHING IN ENDIDLE
0920	REP	3	LAST 1443	10,3206	1 2530 1	TCP	MARKPLAY	
0921	REP	54	LAST 1414	10,3207	0 5435 0	NORMENCH TC	UPFLAG	SET PINBRANCH BIT
0922	REP	1		10,3210	00105 0	ADRES	PINBRFLG	
0923	REP	83	LAST 1437	10,3211	3 4675 1	CAP	BIT14	PRI0 INTERRUPTED
0924	REP	21	LAST 1443	10,3212	7 0100 1	MASK	FLAGWRO4	
0925	REP	402	LAST 1444	10,3213	10 000 0	CCS	A	
0926	REP	1		10,3214	1 2872 1	TCP	KEEPPRI0	
0927	REP	1		10,3215	1 2743 1	TCP	PLAYJUM1	
0928	REP	1		10,3218	0 2550 0	NVDSP TC	COPYPACS	
09281	REP	5	LAST 1443	10,3217	3 0180 0	CA	TEMPOR2	SET UP BLANK BITS FOR NVMONOPT IN CASE
09282	REP	23	LAST 1410	10,3220	7 4716 1	MASK	SEVEN	USER REQUESTS BLANKING MONITOR
09283	REP	230	LAST 1441	10,3221	54 001 1	TS	L	
0929	REP	51	LAST 1411	10,3222	4 4678 0	CS	BIT13	
0930	REP	12	LAST 1442	10,3223	50 184 1	INDEX	COPINDEX	
0931	REP	1		10,3224	7 1087 0	MASK	DSPLG	
0932	REP	13	LAST 1444	10,3225	50 184 1	INDEX	COPINDEX	
0933	REP	2	LAST 1444	10,3228	55=087 0	TS	DSPLG	
0934	REP	32	LAST 1410	10,3227	7 4703 0	MASK	BIT8	BIT8 SET IF DEC MARK PERFORM DISPLAY
0935	REP	5	LAST 1145	10,3230	54 141 1	TS	TEM1	
0936	REP	712	LAST 1443	10,3231	3 0156 0	CA	MPAC +2	
0937	REP	2	LAST 1435	10,3232	54 165 1	TS	MPAC2SAV	
0938	REP	2	LAST 1443	10,3233	55=072 1	TS	MARK2PAC	* FOR DISK ONLY *
0939	REP	14	LAST 1444	10,3234	50 184 1	INDEX	COPINDEX	
0940	REP	2	LAST 1442	10,3235	10 367 1	CCS	NVWORD	
0941	REP	1		10,3236	1 3245 0	TCP	NVDSP1	
0942	REP	1		10,3237	1 3381 1	TCP	CLEANEND	
0943	REP	4	LAST 1436	10,3240	4 0370 1	CS	MARONV	
0944	REP	5	LAST 1444	10,3241	54 370 1	TS	MARONV	IN CASE MARKPLAY AWAKENED AFTER SLEEPING
0945	REP	12	LAST 1405	10,3242	7 6043 1	MASK	LOW7	
0946	REP	1		10,3243	6 3643 0	AD	V05N00M1	
0947	REP	6	LAST 1444	10,3244	6 0141 0	AD	TEM1	
0948	REP	188	LAST 1442	10,3245	6 4712 1	AD	ONE	
0949	REP	1		10,3246	0 4171 1	TC	NVMONOPT	
0950	REP	1		10,3247	1 3373 1	TCP	REST	IF BUSY
0951	REP	6	LAST 380	10,3250	0 4447 1	TC	FLASHOFF	IN CASE OF EXTENDED VERB NON FLASH
0952	REP	1		10,3251	0 2548 1	TC	COPYTOGO	MPACS DESTROYED BY NVSUB



L DISPLAY INTERFACE ROUTINES

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0953	REF	58	LAST 1416	10,3252	0 5447 0	TC	DOWNFLAG	UNSET SLEEPING BITS
0954	REF	1		10,3253	00102 1	ADRES	MRONVFLG	
09541	REF	59	LAST 1445	10,3254	0 5447 0	TC	DOWNFLAG	
09542	REF	1		10,3255	00103 0	ADRES	NRONVFLG	
09543	REF	60	LAST 1445	10,3256	0 5447 0	TC	DOWNFLAG	
09544	REF	1		10,3257	00104 1	ADRES	PRONVFLG	
0955	REF	6	LAST 1444	10,3260	3 0160 0	BLANKCHK	CA	BLANK BITS 1,2,3 IF SET
0956	REF	2	LAST 351	10,3261	0 4271 1	TC	BLANKSUB	
0957	REF	1		10,3262	1 3216 0	TOP	NVDSF	
0958	REF	47	LAST 1443	10,3263	3 4706 1	PERFCHK	CAP	BIT 5 FOR PERFORM
0959	REF	7	LAST 1445	10,3264	7 0160 1	MASK	TEMPOR2	
0960	REF	403	LAST 1444	10,3265	10 000 0	CCS	A	IS THIS A GOPERF DISPLAY
0961	REF	1		10,3266	1 3311 0	TOP	1STOR2ND	YES
0962	REF	56	LAST 1440	10,3267	3 4707 0	GOANIDLE	CAP	
0963	REF	8	LAST 1445	10,3270	7 0160 1	MASK	TEMPOR2	
0964	REF	404	LAST 1445	10,3271	10 000 0	CCS	A	
0965	REF	1		10,3272	1 3406 1	TOP	FLASHSUB	IT IS
0966	REF	9	LAST 1445	10,3273	4 0160 1	CS	TEMPOR2	IS THIS A GODSPRET
0967	REF	56	LAST 1436	10,3274	7 4705 0	MASK	BIT6	
0968	REF	405	LAST 1445	10,3275	10 000 0	CCS	A	
0969	REF	1		10,3276	1 3303 0	TOP	ISITN00	
09691	REF	15	LAST 1444	10,3277	50 164 1	INDEX	COPINDEX	
09692	REF	4	LAST 1442	10,3300	3 0372 1	CA	CADRPLSH	
09693	REF	713	LAST 1444	10,3301	54 157 0	TS	MPAC +3	
09694	REF	1		10,3302	1 3501 1	TOP	ENDIT	
0972	REF	16	LAST 1445	10,3303	50 164 1	ISITN00	INDEX	IS THIS A PASTE
0973	REF	3	LAST 1444	10,3304	3 0367 0	CA	NWORD	
0974	REF	13	LAST 1444	10,3305	7 8043 1	MASK	LOW7	CHECK MADE FOR PINBRNCH AND PRIO ON MARK
0975				10,3306	0 0006 1	EXTEND		
0976	REF	2	LAST 1445	10,3307	1 3406 1	BZF	FLASHSUB	YES, ASSUME PASTE ALWAYS ON FLASH
0977	REF	111	LAST 1435	10,3310	1 5112 1	TOP	ENDOFJOB	NOT FLASH, NOT GOPERF, THEREFORE EXIT
0978	REF	10	LAST 1445	10,3311	3 0160 0	1STOR2ND	CA	
0979	REF	52	LAST 1444	10,3312	7 4676 0	MASK	BIT13	
0980	REF	406	LAST 1445	10,3313	10 000 0	CCS	A	
0981	REF	1		10,3314	1 3267 0	TOP	GOANIDLE	SECOND
0982	REF	53	LAST 1445	10,3315	3 4676 1	CA	BIT13	
0983	REF	17	LAST 1445	10,3316	50 164 1	INDEX	COPINDEX	
0984	REF	3	LAST 1444	10,3317	27=067 0	ADS	DSPLG	
09845				10,3320	22 007 0	ZL		
0985				10,3321	0 0006 1	EXTEND		IS IT MARK
0986	REF	1		10,3322	6 2571 0	BZMF	MARKPERF	YES

L DISPLAY INTERFACE ROUTINES

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0987	REP	35	LAST 1381	10,3323	7 4877 1	MASK	BIT12
09871				10,3324	0 0006 1	EXTEND	
09872	REP	1		10,3325	1 3331 1	BZF	V50PASTE
09874	REP	20	LAST 678	10,3328	4 1145 1	CS	NVWORD1
098741	REP	1		10,3327	6 3667 0	AD	V97N00
09875	REP	2	LAST 1438	10,3330	1 3248 0	TCF	NV50DSP
0988	REP	1		10,3331	3 3628 0	V50PASTE CAP	V50N00
0989	REP	3	LAST 1448	10,3332	1 3248 0	TCF	NV50DSP
0990	REP	48	LAST 1445	10,3333	4 4708 0	WITCHONE CS	BITS
0991				10,3334	0 0006 1	EXTEND	
0992	REP	35	LAST 1418	10,3335	03 011 1	WAND	DSALMOUT
0993	REP	22	LAST 1444	10,3338	3 0100 0	CA	FLAGRD4
0994	REP	1		10,3337	7 3844 0	MASK	NVBUSMSK
0995	REP	407	LAST 1445	10,3340	10 000 0	CCS	A
0996	REP	169	LAST 1444	10,3341	3 4712 1	CAP	ONE
0997	REP	231	LAST 1444	10,3342	54 001 1	TS	L
0998	REP	280	LAST 1443	10,3343	3 4714 1	CAP	ZERO
0999	REP	232	LAST 1448	10,3344	50 001 0	INDEX	L
1000	REP	11	LAST 370	10,3345	57=042 0	XCH	CADRSTOR
1001				10,3346	0 0004 0	INHINT	
1002	REP	336	LAST 1441	10,3347	0 0002 0	TC	0
1003	REP	6	LAST 360	10,3350	3 4233 1	XCHTOEND CAP	ENDINST
1004	REP	29	LAST 1442	10,3351	56 064 0	XCHNYLOC XCH	LOCCTR
1005				10,3352	0 0006 1	EXTEND	
1006	REP	2	LAST 1442	10,3353	6 3357 0	BZMP	RELINTO
1007	REP	30	LAST 1446	10,3354	56 064 0	XCH	LOCCTR
1008	REP	31	LAST 1446	10,3355	50 064 0	INDEX	LOCCTR
1009	REP	42	LAST 1407	10,3356	54 164 0	TS	LOC
1010				10,3357	0 0003 1	RELINTO	RELINT
1011	REP	337	LAST 1448	10,3360	0 0002 0	TC	0
1012	REP	5	LAST 777	10,3361	3 7667 1	CLEANEND CAP	PRI032
1014	REP	33	LAST 1387	10,3362	0 5042 1	TC	PINDVAC
1015	REP	2	LAST 180	0371		ERANK=	NVSAVE
1016	REP	1		10,3363	04245 0	ZCADR	JAMTERM
1016	REP	1		10,3364	04100 1		
1017	REP	3	LAST 1445	10,3365	1 3407 0	TCF	FLASHSUB +1
1018	REP	23	LAST 1448	10,3366	3 0100 0	ISITPRIO CA	FLAGRD4
1019	REP	1		10,3367	7 3414 1	MASK	ITISMASK
1020				10,3370	0 0006 1	EXTEND	
1021	REP	2	LAST 1437	10,3371	1 2723 1	BZF	PRI0BORT
1022	REP	112	LAST 1445	10,3372	1 5112 1	TCF	ENDOFJOB

NVOWRD1= -0 IS V97. NVWORD1= -400 IS V99

DISPLAY SECOND PART OF GOPERF

TURN OFF KEY RELEASE LIGHT

IS IT NVSUB ASLEEP

TC ENDOFJOB REPLACES GENADR IN LOC FOR
WAS THIS ADDRESS SLEEPING

NO
YES

BACK TO USER

ONE LOWER THAN DISPLAYS SLEEPING

IS PINBRPLG, MARKIDFLG SET



L DISPLAY INTERPACE ROUTINES

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1023	REF	12	LAST 1446	10,3373	11=042 1	REST	CCS	CADRSTOR
1024	REF	113	LAST 1446	10,3374	1 5112 1		TCF	ENDOFJOB
1025	REF	1		10,3375	1 3377 0		TCF	RESTSLEP
1026	REF	114	LAST 1447	10,3376	1 5112 1		TCF	ENDOFJOB
1027	REF	2	LAST 1435	10,3377	3 0162 1	RESTSLEP	CA	GENMASK
1028	REF	1		10,3400	7 3645 1		MASK	ASTROMSK
1029	REF	3	LAST 1443	10,3401	0 7717 1		TC	UPENT2
1030				10,3402	24100 0	OCT24100	OCT	24100
1031	REF	18	LAST 1445	10,3403	50 164 1		INDEX	COPINDEX
1032	REF	1		10,3404	3 3635 1		CAP	NVCADR
1033	REF	2	LAST 376	10,3405	0 4456 1		TC	NVSUBBUSY
1034	REF	4	LAST 359	10,3406	0 4443 0	FLASHSUB	TC	FLASHON
1035	REF	19	LAST 1447	10,3407	3 0164 1		CA	COPINDEX
1036	REF	1		10,3410	54 157 0		TS	COPMPAC
1037	REF	3	LAST 1447	10,3411	3 0162 1		CA	GENMASK
1038	REF	1		10,3412	7 3136 1		MASK	IDLEMASK
1039	REF	4	LAST 1447	10,3413	0 7717 1		TC	UPENT2
1040				10,3414	40040 0	ITISMASK	OCT	40040
1041	REF	2	LAST 188	10,3415	3 1073 1		CA	R1SAVE
1042	REF	20	LAST 1447	10,3416	50 164 1		INDEX	COPINDEX
1043	REF	37	LAST 1443	10,3417	7 4710 1		MASK	BIT3
1044	REF	408	LAST 1446	10,3420	10 000 0		CCS	A
1045	REF	1		10,3421	1 3506 0		TCF	UNSETRI
1046	REF	13	LAST 1447	10,3422	11=042 1		CCS	CADRSTOR
1047	REF	1		10,3423	1 3366 0		TCF	ISITPRIO
1048				10,3424	1 3426 0		TCF	+2
1049	REF	2	LAST 1447	10,3425	1 3366 0		TCF	ISITPRIO
1050	REF	1		10,3426	0 4223 0		TC	ENDIDLE
1051	REF	1		10,3427	1 3520 1	IDLERET1	TCF	TERMATE
1052	REF	1		10,3430	1 3537 1		TCF	PROCEED
1053	REF	1		10,3431	4 3654 1		CS	LOWLOAD
1054	REF	714	LAST 1445	10,3432	6 0154 1		AD	MPAC
1055				10,3433	0 0006 1		EXTEND	
1056	REF	409	LAST 1447	10,3434	26 000 0		DIM	A
1057				10,3435	0 0006 1		EXTEND	
1058	REF	1		10,3436	1 3607 1		BZF	LOADITIS
1059	REF	77	LAST 1439	10,3437	3 4711 1	OKTOENT	CAP	TWO
1060	REF	1		10,3440	54 161 0	ENDOUT	TS	OUTHERE

IS SOMEONE IN ENDIDLE
YES

SET NVSLEEP BITS

*** DONT MOVE

BUSY OR ABORT IF ILLEGAL

COPINDEX DESTROYED BY ENDIDLE

***.ENDIDLE ALLOW *** DONT MOVE

IS THIS A REPEAT AND RETURN DISPLAY

YES

SEE IF SOMEONE ALREADY IN ENDIDLE

ENDIDLE RETURNS HERE ON PROCEED

VERBREG

V21 OR V22 OR V23 ON DSKY



L DISPLAY INTERFACE ROUTINES

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1061	REP	24	LAST 1446	10,3441	3 0100 0	CA	FLAGRD4	CHECK NATURE OF ENDIDLE RETURN
1062	REP	15	LAST 1379	10,3442	7 4105 0	MASK	OCTB0000	
1063	REP	410	LAST 1447	10,3443	10 000 0	CCS	A	
1064	REP	1		10,3444	1 3447 1	TCP	TIMECHECK	PRIO ENDIDLE RETURN
1065	REP	1		10,3445	1 3555 0	TCP	NORMRET	NORMAL ENDIDLE RETURN
1066	REP	1		10,3446	1 3541 0	TCP	MARKRET	MARK ENDIDLE RETURN
1067	REP	23	LAST 1436	10,3447	4 0025 1	TIMECHECK	CS	TIME1
1068	REP	2	LAST 1436	10,3450	6 1147 1	AD	PRIOTIME	
1069	REP	411	LAST 1446	10,3451	10 000 0	CCS	A	
1070				10,3452	4 0000 0	CCM		
1071	REP	5	LAST 1364	10,3453	6 7700 1	AD	OCT37776	
1072	REP	170	LAST 1446	10,3454	6 4712 1	AD	ONE	
1073	REP	1		10,3455	6 3677 1	AD	-2SEC	
1074				10,3456	0 0008 1	EXTEND		
1075	REP	2	LAST 1444	10,3457	6 2672 0	BZMP	KEEPPRIO	
1076	REP	2	LAST 1446	10,3460	1 3555 0	TCP	NORMRET	
1084	REP	171	LAST 1446	10,3461	3 4712 1	NORMAKE	CAP	ONE
1085	REP	1		10,3462	1 3152 0	TCP	WAKEPLAY	
1086	REP	2	LAST 1447	10,3463	10 161 0	ENDRET	CCS	OUTHERE
1087	REP	172	LAST 1446	10,3464	6 4712 1	AD	ONE	
1088				10,3465	1 3467 0	TCP	+2	NORMAL ENDIDLE EXIT
1089	REP	115	LAST 1447	10,3466	1 5112 1	TCP	ENDOPJOB	
1090	REP	2	LAST 1447	10,3467	50 157 1	INDEX	COPMPAC	
1091	REP	5	LAST 1445	10,3470	6 0372 1	AD	CADRPLSH	
1092	REP	715	LAST 1447	10,3471	54 157 0	TS	MPAC +3	
1093	REP	4	LAST 1447	10,3472	3 0162 1	CA	GENMASK	REMOVE ENDIDLE AND PINBRANCH BITS
1094	REP	1		10,3473	7 3475 0	MASK	PINIDMSK	
1095	REP	3	LAST 1443	10,3474	0 7735 1	TC	DOWNT2	
1096				10,3475	74044 1	PINIDMSK	OCT	74044
1097	REP	50	LAST 1443	10,3476	4 6214 1	CS	THREE	BLANK EVERYTHING EXCEPT MM
1098	REP	2	LAST 231	10,3477	0 4170 0	TC	NVSUB	
1099				10,3500	1 3501 1	TCP	+1	
1100	REP	3	LAST 1439	10,3501	3 0163 0	ENDIT	CA	USERPRIO
1101	REP	6	LAST 1443	10,3502	7 7674 1	MASK	PRI037	RETURN TO USERS PRIORITY
1102	REP	12	LAST 1443	10,3503	0 5103 0	TC	PRI0CHG	
1103	REP	716	LAST 1446	10,3504	3 0157 1	CA	MPAC +3	
1104	REP	11	LAST 1443	10,3505	1 4577 1	TCP	BANKJUMP	
1105	REP	21	LAST 1447	10,3506	50 184 1	UNSETR1	INDEX	RESET REPEAT AND RETURN REQUEST
1106	REP	38	LAST 1447	10,3507	4 4710 1	CS	BIT3	
1107	REP	3	LAST 1447	10,3510	7 1073 0	MASK	R1SAVE	
1108	REP	4	LAST 1446	10,3511	55=073 0	TS	R1SAVE	



L DISPLAY INTERFACE ROUTINES

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1109 REF 281 LAST 1448 10,3512 3 4714 1 CAP ZERO *** 205 ONLY MARKBRAN USERS IN
1110 REF 2 LAST 1443 10,3513 0 4868 0 TC SUPERBW SUPERBANK 0

1111 REF 51 LAST 1448 10,3514 3 6214 0 -1 CAP THREE
1112 REF 22 LAST 1448 10,3515 50 184 1 IMMEDRET INDEX COPINDEX
1113 REF 6 LAST 1446 10,3516 6 0372 1 AD CADRFLSH
1114 REF 12 LAST 1446 10,3517 1 4577 1 TCP BANKJUMP

1115 REF 282 LAST 1449 10,3520 3 4714 1 TERMATE CAP ZERO
1116 REF 1 10,3521 1 3440 0 TCP ENDOUT ASTRONAUT TERMINATE (V34) RETURNS TO

1117 REF 11 LAST 1441 10,3522 4 0180 1 LINUSCHR CS PLAYTEM4 IS THIS A LINUS
1118 REF 84 LAST 1444 10,3523 7 4875 0 MASK BIT14
1119 REF 412 LAST 1446 10,3524 10 000 0 CCS A
1120 REF 4 LAST 1372 10,3525 1 6706 1 TCP Q+1
1121 REF 3 LAST 1442 10,3526 4 0157 0 CS PLAYTEM3 NO
1122 REF 23 LAST 1449 10,3527 50 184 1 INDEX COPINDEX YES, IS IT ALREADY IN ENDIDLE
1123 REF 7 LAST 1449 10,3530 6 0372 1 AD CADRFLSH
1124 10,3531 0 0006 1 EXTEND
1125 10,3532 1 3534 1 BZP +2 YES

1126 REF 336 LAST 1446 10,3533 0 0002 0 TC 0 NO
1127 REF 12 LAST 381 10,3534 11 012 1 CCS DSPLOCK IS THE ASTRONAUT BUSY
1128 REF 116 LAST 1446 10,3535 0 5112 0 TC ENDOPJOB END THE NEW DISPLAY, ITS ALREADY ACTIVE
1129 REF 339 LAST 1449 10,3536 0 0002 0 TC 0

R1130 MORE LOGIC COULD BE INCORPORATED HERE TO MAKE SURE A RECYCLE IS A RECYCLAND CONVERSLY THAT A LOAD IS A LOAD.
1132 REF 173 LAST 1448 10,3537 3 4712 1 PROCEED CAP ONE ASTRONAUT PROCEED (V33) RETURNS
1133 REF 2 LAST 1449 10,3540 1 3440 0 TCP ENDOUT

R1136 LASTPLAY CHECKS TO SEE IF (1) THE LAST NORMAL DISPLAY WAS EITHER INTERRUPTED BY A PRIO OR A MARK (MARK
R1140 COULD ONLY HAPPEN DURING PINBRANCH) OR IF (2) THE LAST NORMAL DISPLAY WAS REQUESTED WHILE A HIGHER PRIORITY
R1142 DISPLAY WAS GOING RESULTING IN THE NORMAL BEING PUT TO SLEEP.

R1143 IF EITHER OF THE ABOVE 2 CONDITIONS EXISTS, THE NORMAL DISPLAY IS AWAKENED TO GO TO PLAYJUM1 WHICH STARTS
R1145 UP THE MOST RECENT VALID NORMAL DISPLAY. IF THESE 2 CONDITIONS DO NOT EXIST, CONTROL GOES TO PLAYJUM1 WHICH IS
R1147 STARTED IMMEDIATELY WITH THE ASSUMPTION THAT THE MOST RECENT NORMAL DISPLAY IS ALREADY IN-ENDIDLE(DURING A
R1149 PINBRANCH) OR THAT A RESTART HAS OCCURRED AND THE DISPLAY CAN BE STARTED AS A .1 RESTART.

1163 REF 42 LAST 1391 10,3541 4 6211 1 MARKRET CS SIX
1164 REF 25 LAST 1446 10,3542 7 0100 1 MASK FLAGWRD4 *** MAY MOVE DISPLAY FLAGWORD OUT OF
1165 10,3543 0 0004 0 INHINT
1166 REF 26 LAST 1449 10,3544 54 100 1 TS FLAGWRD4

1167 10,3545 0 0003 1 RELINT
1168 REF 2 LAST 1443 10,3546 1 3463 1 TCP ENDRET INHINT REALM

1169 REF 2 LAST 1402 10,3547 3 7716 0 MARKOVER CAP MINUS1
1170 REF 3 LAST 1448 10,3550 54 181 0 TS OUTHERE RUPTREG2 IS - MEANS ENDOPJOB TO ENDRET

L DISPLAY INTERFACE ROUTINES

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1171	REP	27	LAST 1449	10,3551	3 0100 0	CA	FLAGWRD4	IS ENDIDFLG SET
1172	REP	15	LAST 1372	10,3552	7 4371 1	MASK	PRI030	IS NORMAL OR PRIO IN ENDIDLE
1173	REP	413	LAST 1449	10,3553	10 000 0	CCS	A	
1174	REP	1		10,3554	1 3207 0	TCP	NORMENCH	
1175	REP	28	LAST 1450	10,3555	3 0100 0	NORMRET CA	FLAGWRD4	IS MARK SLEEPING
1176	REP	2	LAST 1443	10,3556	7 3652 1	MASK	BIT55+11	OR WAITING
1177	REP	414	LAST 1450	10,3557	10 000 0	CCS	A	
1178	REP	1		10,3560	1 3151 0	TCP	MARKWAKE	
1179	REP	29	LAST 1450	10,3561	3 0100 0	CA	FLAGWRD4	NO
1180	REP	1		10,3562	7 3653 1	MASK	BIT54+10	IS NORMAL INTERRUPTED OR WAITING
1181	REP	415	LAST 1450	10,3563	10 000 0	CCS	A	
1182	REP	1		10,3564	1 3461 0	TCP	NORMWAKE	YES
1183	REP	5	LAST 1443	10,3565	3 1071 0	CA	EBANKTEM	NO, WAS IT A FLASH REQUEST
1184	REP	6	LAST 1410	10,3566	7 4726 1	MASK	OCT50	OR A GODSPRET
1185	REP	416	LAST 1450	10,3567	10 000 0	CCS	A	
1186	REP	3	LAST 1449	10,3570	1 3463 1	TCP	ENDRET	YES
1187	REP	3	LAST 1446	10,3571	3 0371 1	CA	NVSAVE	
1188				10,3572	0 0006 1	EXTEND		
1189	REP	4	LAST 1450	10,3573	1 3463 1	BZP	ENDRET	
1190	REP	4	LAST 648	10,3574	3 4762 0	CAP	PRI015	
1191				10,3575	0 0004 0	INHINT		
1192	REP	35	LAST 1440	10,3576	0 5027 1	TC	NOVAC	
1193	REP	4	LAST 1445	0367		EBANK=	NVWORD	
1194	REP	2	LAST 1444	10,3577	02743 0	2CADR	PLAYJUM1	
1194				10,3600	20100 1			
1195	REP	5	LAST 1450	10,3601	1 3463 1	TCP	ENDRET	
1196	REP	30	LAST 1450	10,3602	3 0100 0	MARSLEEP CA	FLAGWRD4	IS MARK ALREADY IN
1197	REP	3	LAST 1450	10,3603	7 3652 1	MASK	BIT55+11	
1198	REP	417	LAST 1450	10,3604	10 000 0	CCS	A	
1199	REP	117	LAST 1449	10,3605	1 5112 1	TCP	ENDOFJOB	YES
11991	REP	3	LAST 1439	10,3606	1 3102 0	TCP	GOSLEEPS	
1200	REP	3	LAST 1448	10,3607	50 157 1	LOADITIS INDEX	CORMPAC	
1201	REP	5	LAST 1450	10,3610	3 0367 0	CA	NVWORD	
1202	REP	14	LAST 1445	10,3611	7 6043 1	MASK	LOW7	
1203				10,3612	4 0000 0	CON		
1204	REP	717	LAST 1448	10,3613	6 0155 0	AD	MPAC +1	NOUNREG
1205				10,3614	0 0006 1	EXTEND		
1206	REP	1		10,3615	1 3437 0	BZP	OKTOENT	NO, THEN LOAD IS VALID
1207	REP	6	LAST 447	10,3616	1 3176 0	TCP	PINBRNCH	YES, ACCEPT LOAD BUT ASK FOR LAST AGAIN
1208	REP	52	LAST 1449	10,3617	4 6214 1	ERASER CS	THREE	BLANK EVERYTHING EXCEPT MM
1209	REP	3	LAST 1448	10,3620	0 4170 0	TC	NVSUB	
1210	REP	118	LAST 1450	10,3621	1 5112 1	TCP	ENDOFJOB	



L DISPLAY INTERPACE ROUTINES

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1211	REP	119	LAST 1450	10,3622	1 5112	1	TCP	ENDOFJOB			
1212				10,3623	00036	1	PERPMASK	OCT	0036	FLASH, PERFORM, BLANK R2 AND R3	
1213				10,3624	00231	1	V01N25	VN	00125		
1214				10,3625	01407	0	V06N07	VN	00607	GOPEP3 VN DISPLAY BEFORE V50	
1215				10,3626	14400	0	V50N00	VN	5000		
1216				10,3627	00030	1	PERP2MSK	OCT	00030	FLASH, PERFORM	
1217				10,3630	01006	0	V04N06	VN	00406		
1218				10,3631	00014	1	PERP4MSK	OCT	14	FLASH, BLANK R3	
1219	REP	7	LAST 1450	10,3176			GOAGIN	EQUALS	PINBRNCH		
1220				10,3632	20010	1	REDOMASK	OCT	20010	BITS 4 AND 14	
1221				10,3633	40230	1	MARK3MSK	OCT	40230	MARK, DECIMAL NOUN, PERFORM, FLASH	
1222				10,3634	40036	0	MARK4MSK	OCT	40036	MARK, PERFORM, FLASH, BLANK 2 AND 3	
1223	REP	1		10,3635	20670	1	NVCADR	CADR	REDOPRIO		
1224	REP	4	LAST 1444	10,3636	20530	0	WAKECADR	CADR	MARKPLAY		
1225	REP	3	LAST 1450	10,3637	20743	0		CADR	PLAYJUM1		
1226				10,3640	03400	0	OCT3400	OCT	3400	BRANK MASK	
1227				10,3641	11210	1	NBUSMASK	OCT	11210		
1228				10,3642	66521	1	PMASK	OCT	66521		
1229	REP	4	LAST 356	4160			VERPMASK	=	MID7	(OCT 37600)	
1230				10,3643	01177	1	V05N00M1	OCT	1177	V05 MINUS ONE	
1231	REP	1		10,2461			GOXDSP	EQUALS	GOMARK		
1232	REP	1		10,2501			GOXDSPR	EQUALS	GOMARKR		
1233	REP	9	LAST 691	10,2465			GOXDSPF	EQUALS	GOMARKF		
1234	REP	5	LAST 691	10,2504			GOXDSPFR	EQUALS	GOMARKFR		
1235	REP	4	LAST 563	5423			ENDEXT	EQUALS	ENDMARK		
1236	REP	14	LAST 1186	0165			MPAC2SAV	EQUALS	BANKSET		
1238				10,3644	00700	0	NVBUSMSK	OCT	700		
12385				10,3645	00704	1	ASTROMSK	OCT	704		
1239				10,3646	40030	0	MPERFMSK	OCT	40030	BIT 15,5,4 FOR MARK, PERFORM, FLASH	
1240				10,3647	34300	0	OCT34300	OCT	34300		
1241				10,3650	40100	1	BITS15+7	OCT	40100		
1242				10,3651	00110	1	BITS7+4	OCT	110		
1243	REP	3	LAST 1441	1067			DSPLG	EQUALS	ERANKSAV		
1244	REP	1		1070			MARKFLAG	EQUALS	MARKEBAN		
1245	REP	6	LAST 1450	1071			SAVEFLAG	EQUALS	ERANKTEM		
1246				10,3652	02020	1	BITS5+11	OCT	2020	* DONT MOVE	
1247				10,3653	01010	1	BITS4+10	OCT	1010	* DONT MOVE	
1249				10,3654	00028	0	LOWLOAD	DEC	22		
1250				10,3655	77730	0	BUSYMSK	OCT	77730		
1252				10,3656	00050	1	CADRMASK	OCT	50		
1253	REP	7	LAST 1393	7707			PINMASK	EQUALS	13,14,15		
1254	REP	2	LAST 1445	10,3216			GOPLAY	EQUALS	NVDSP		
A1255							PRIOSAVE	EQUALS	R1SAVE		
1256	REP	718	LAST 1450	0157			CORMPAC	EQUALS	MPAC +3		
1257	REP	719	LAST 1451	0160			TEMPOR2	EQUALS	MPAC +4		
1258	REP	720	LAST 1451	0161			OUTHERE	EQUALS	MPAC +5		
1259	REP	43	LAST 1448	0164			COPINDEX	EQUALS	LOC		
1260	REP	26	LAST 1152	0163			USERPRIO	EQUALS	MODE		



L DISPLAY INTERFACE ROUTINES

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1261	REF 721	LAST 1451	0162		GENMASK	EQUALS	MPAC +6	
1262			10,3857	20144 1	PRIOOCT	OCT	20144	PRIO
1263			10,3860	42424 0	MARKOCT	OCT	42424	MARK
1264			10,3861	11254 1		OCT	11254	NORM
1265			10,3862	74704 1	IDLESLEP	OCT	74704	
1266			10,3863	87777 1	OCT87777	OCT	87777	
1267	REF 18	LAST 891	5415		LINUS	EQUALS	BLANKET	
1268	REF 722	LAST 1452	0154		FACEREG	EQUALS	MPAC	
1269	REF 723	LAST 1452	0155		PLAYTEM1	EQUALS	MPAC +1	
1270	REF 724	LAST 1452	0157		PLAYTEM3	EQUALS	MPAC +3	
1271	REF 725	LAST 1452	0160		PLAYTEM4	EQUALS	MPAC +4	
1273			10,3864	40420 0	OCT40420	OCT	40420	
1274	REF 3	LAST 1440	10,3865	02674 0	MAKEGEN	GENADR	MAKEPLAY	
1275			10,3866	10200 1	OCT10200	OCT	10200	
1276			10,3867	30200 0	V97N00	VN	09700	
12761			10,3670	20100 1	OCT20100	OCT	20100	

PASTE FOR V97 OR V99



L SERVICE ROUTINES

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0037			7717		BLOCK 3		
0038	REF	1	6000		SETLOC	FFTAG6	
0039			7717		BANK		
0040	REF	1			COUNT	03/FLAG	
0043	REF	233	LAST 1446	7717 54 001 1	UPENT2	TS	L
0044	REF	4	LAST 1362	7720 7 4716 1	MASK	OCT7	
0045	REF	234	LAST 1453	7721 56 001 0	XCH	L	WHICH FLAGWORD IS IT
0046	REF	3	LAST 1364	7722 7 5630 0	MASK	OCT77770	SAVE IN L FOR INDEXING
0047				7723 0 0004 0	INHINT		OBTAIN THE BIT INFORMATION
0048	REF	30	LAST 1404	7724 54 061 1	TS	ITEMP1	PREVENT INTERRUPTS
0049	REF	235	LAST 1453	7725 50 001 0	NDX	L	STORE THE BIT INFORMATION TEMPORARILY
0050	REF	12	LAST 993	7726 4 0074 0	CS	FLAGWRD0	
0051	REF	31	LAST 1453	7727 7 0061 1	MASK	ITEMP1	
0052	REF	236	LAST 1453	7730 50 001 0	NDX	L	
0053	REF	13	LAST 1453	7731 26 074 0	ADS	FLAGWRD0	
0054				7732 0 0003 1	RELINT		RELEASE INTERRUPT INHIBIT
0055	REF	340	LAST 1449	7733 24 002 0	INCR	0	OBTAIN THE CORRECT RETURN ADDRESS
0056	REF	341	LAST 1453	7734 0 0002 0	TC	0	RETURN
0059	REF	237	LAST 1453	7735 54 001 1	DOWNENT2	TS	L
0060	REF	5	LAST 1453	7736 7 4716 1	MASK	OCT7	WHICH FLAGWORD IS IT
0061	REF	238	LAST 1453	7737 56 001 0	XCH	L	SAVE IN L FOR INDEXING
0062	REF	4	LAST 1453	7740 7 5630 0	MASK	OCT77770	OBTAIN THE BIT INFORMATION
0063				7741 4 0000 0	COM		START TO PROCESS THE INFORMATION
0064				7742 0 0004 0	INHINT		PREVENT INTERRUPTS
0065	REF	239	LAST 1453	7743 50 001 0	NDX	L	
0066	REF	14	LAST 1453	7744 7 0074 0	MASK	FLAGWRD0	
0067	REF	240	LAST 1453	7745 50 001 0	NDX	L	
0068	REF	15	LAST 1453	7746 54 074 0	TS	FLAGWRD0	
0069				7747 0 0003 1	RELINT		RELEASE INTERRUPT INHIBIT
0070	REF	342	LAST 1453	7750 24 002 0	INCR	0	OBTAIN THE CORRECT RETURN ADDRESS
0071	REF	343	LAST 1453	7751 0 0002 0	TC	0	RETURN
0072	REF	24	LAST 1444	4716	OCT7	EQUALS SEVEN	
0073			10,3671		BANK	10	



L SERVICE ROUTINES

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P0074
R0075 UPFLAG AND DOWNFLAG ARE ENTIRELY GENERAL FLAG SETTING AND CLEARING SUBROUTINES. USING THEM, WHETHER OR
R0077 NOT IN INTERRUPT, ONE MAY SET OR CLEAR ANY SINGLE, NAMED BIT IN ANY ERASABLE REGISTER, SUBJECT OF COURSE TO
R0079 ERANK SETTING. A NAMED BIT, AS THE WORD IS USED HERE, IS ANY BIT WITH A NAME FORMALLY ASSIGNED BY THE YUL
R0081 ASSEMBLER.

R0082 AT PRESENT THE ONLY NAMED BITS ARE THOSE IN THE FLAGWORDS. ASSEMBLER CHANGES WILL MAKE IT POSSIBLE TO
R0084 NAME ANY BIT IN ERASABLE MEMORY.

R0085 CALLING SEQUENCES ARE AS FOLLOWS:-

R0086	TC	UPFLAG	TC	DOWNFLAG
R0087	ADRES	NAME OF FLAG	ADRES	NAME OF FLAG

R0088 RETURN IS TO THE LOCATION FOLLOWING THE ADRES, ABOUT .58 MS AFTER THE ATC.

R0090 UPON RETURN A CONTAINS THE CURRENT FLAGWORD SETTING.

0091			5435		BLOCK 02	
0092	REP	5	LAST 1381	4000	SETLOC FFLAG1	
0093			5435		BANK	
0094	REP	1			COUNT* \$\$/FLAG	
0095	REP	344	LAST 1453	5435 3 0002 0	UPFLAG	CA Q
0096	REP	1		5436 0 5453 0	TC	DEBIT
0097				5437 4 0000 0	COM	+(15 - BIT)
0098				5440 0 0006 1	EXTEND	
0099	REP	16	LAST 1101	5441 04 001 1	ROR	LOHAN SET BIT
0100	REP	32	LAST 1453	5442 50 061 0	COMFLAG	INDEX 1TEMP1
0101	REP	16	LAST 1453	5443 54 074 0	TS	FLAGWORD0
0102	REP	5	LAST 1379	5444 22 063 1	LXCH	1TEMP3
0103				5445 0 0003 1	RELINT	
0104	REP	241	LAST 1453	5446 0 0001 0	TC	L
0105	REP	345	LAST 1454	5447 3 0002 0	DOWNFLAG	CA Q
0106	REP	2	LAST 1454	5450 0 5453 0	TC	DEBIT
0107	REP	242	LAST 1454	5451 7 0001 1	MASK	L RESET BIT
0108	REP	1		5452 1 5442 1	TCF	COMFLAG
0109	REP	174	LAST 1440	5453 6 4712 1	AD	ONE GET DE BITS
0110				5454 0 0004 0	INHINT	
0111	REP	6	LAST 1454	5455 54 063 0	TS	1TEMP3
0112	REP	4	LAST 1167	5456 3 4721 1	CA	LOW4 DEC15
0113	REP	33	LAST 1454	5457 54 061 1	TS	1TEMP1
0114	REP	7	LAST 1454	5460 50 063 1	INDEX	1TEMP3
0115				5461 2-7777 0	CA	0 -1 ADRES
0116	REP	243	LAST 1454	5462 54 001 1	TS	L
0117	REP	283	LAST 1449	5463 3 4714 1	CA	ZERO



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0118				5464	0 0006 1
0119	REP	34	LAST 1454	5465	10 081 1
0120	REP	35	LAST 1455	5466	52 082 1
0121	REP	36	LAST 1455	5467	50 081 0
0122	REP	17	LAST 1454	5470	3 0074 1
0123	REP	244	LAST 1454	5471	54 001 1
0124	REP	22	LAST 1403	5472	50 082 0
0125	REP	56	LAST 1434	5473	4 4674 1
0126	REP	346	LAST 1454	5474	0 0002 0

EXTEND	
DV	ITEMP1
DXCH	ITEMP1
INDEX	ITEMP1
CA	FLAGWRD0
TS	L
INDEX	ITEMP2
CS	BIT15
TC	0

A = FLAGWRD, L = (15 - BIT)

CURRENT STATE

-(15 - BIT)

L SERVICE ROUTINES

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P0127 DELAYJOB- A GENERAL ROUTINE TO DELAY A JOB A SPECIFIC AMOUNT OF TIME BEFORE PICKING UP AGAIN.

R0129 ENTRANCE REQUIREMENTS...

A0130 CAP DT
A0131 TC BANKCALL
A0132 CADR DELAYJOB

DELAY JOB FOR DT CENTISECS

0133 00,3651 BANK 06
0134 REF 1 00,2000 SETLOC DLAYJOB
0135 00,3732 BANK

R0136 THIS MUST REMAIN IN BANK 0 *****
0137 REF 1 COUNT 00/DELAY

0138			00,3732	0 0004 0	DELAYJOB	INHINT	
0139	REF 347	LAST 1455	00,3733	54 002 1	TS	Q	STORE DELAY DT IN Q FOR DLY -1 IN
0140	REF 1		00,3734	3 6214 0	CAP	DELAYNUM	WAITLIST
0141	REF 37	LAST 1405	00,3735	54 070 1	DELOOP	RUPTREG1	
0142	REF 416	LAST 1450	00,3736	50 000 1	TS	INDEX	A
0143	REF 5	LAST 166	00,3737	3 1141 1	CA	DELAYLOC	IS THIS DELAYLOC AVAILABLE
0144			00,3740	0 0006 1	EXTEND		
0145	REF 1		00,3741	1 3746 0	BZF	OK2DELAY	YES
0146	REF 38	LAST 1456	00,3742	10 070 1	CCS	RUPTREG1	NO, TRY NEXT DELAYLOC
0147	REF 1		00,3743	1 3735 1	TCF	DELOOP	
0148	REF 7	LAST 1199	00,3744	0 5604 0	TC	BAILOUT	NO AVAILABLE LOC'S AVAILABLE.
0149			00,3745	01104 0	OCT	1104	
0150	REF 1		00,3746	3 3766 0	OK2DELAY	CA	TC SLEEP
0151	REF 5	LAST 1193	00,3747	54 061 1	TS	WAITEXIT	SET WAITLIST IMMEDIATE RETURN
0152	REF 30	LAST 1180	00,3750	3 0004 0	CA	FBANK	
0153	REF 39	LAST 1456	00,3751	6 0070 0	AD	RUPTREG1	STORE BRANK FOR TASK CALL
0154	REF 245	LAST 1455	00,3752	54 001 1	TS	L	
0155	REF 1		00,3753	3 3767 1	CAP	WAKECAD	STORE CADR FOR TASK CALL
0156	REF 2	LAST 1193	00,3754	1 5146 0	TCF	DLY2 -1	DLY IS IN WAITLIST ROUTINE
0157	REF 7	LAST 1441	00,3755	0 4604 1	TCGETCAD	TC	MAKECADR
0158	REF 40	LAST 1456	00,3756	50 070 0	INDEX	RUPTREG1	
0159	REF 6	LAST 1456	00,3757	55=141 0	TS	DELAYLOC	SAVE DELAY CADRS
0160	REF 8	LAST 1442	00,3760	0 5070 0	TC	JOBSLEEP	
0161	REF 284	LAST 1454	00,3761	3 4714 1	WAKER	CAP	ZERO
0162	REF 36	LAST 1440	00,3762	50 006 1	INDEX	BRANK	
0163	REF 7	LAST 1456	00,3763	57=141 1	XCH	DELAYLOC	MAKE DELAYLOC AVAILABLE



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0164	REF	13	LAST 1443	00,3764	0 5074 1	TC	JOBWAKE
0165	REF	73	LAST 1407	00,3765	0 5213 1	TC	TASKOVER
0166	REF	1		00,3766	03753 0	TCSLEEP	GENADR TOGETCAD -2
0167	REF	1		00,3767	03761 1	WAKECAD	GENADR WAKER



L SERVICE ROUTINES

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P0169 GENTRAN, A BLOCK TRANSFER ROUTINE.

R0170 WRITTEN BY D. EYLES

R0171 MOD 1 BY KERNAN

UTILITY REV 17 11/18/87

R01722 MOD 2 BY SCHULENBERG (REMOVE RELINT) SKIPPER REV 4 2/28/68

R0173 THIS ROUTINE IS USEFULL FOR TRANSFERING N CONSECUTIVE ERASABLE OR FIXED QUANTITIES TO SOME OTHER N
R0175 CONSECUTIVE ERASABLE LOCATIONS. IF BOTH BLOCKS OF DATA ARE IN SWITCHABLE EBANKS, THEY MUST BE IN THE SAME ONE.

R0177 GENTRAN IS CALLABLE IN A JOB AS WELL AS A RUPT. THE CALLING SEQUENCE IS'

A0179	I	CA	N-1	/ OF QUANTITIES MINUS ONE.
A0180	I +1	TC	GENTRAN	IN FIXED-FIXED.
A0181	I +2	ADRES	L	STARTING ADRES OF DATA TO BE MOVED.
A0182	I +3	ADRES	M	STARTING ADRES OF DUPLICATION BLOCK.
A0183	I +4			RETURNS HERE.

R0184 GENTRAN TAKES 25 MCT-S (300 MICROSECONDS) PER ITEM + 5 MCT-S (80 MICS) FOR ENTERING AND EXITING.

R0186 A, L AND ITEMPI ARE NOT PRESERVED.

0187			5475		BLOCK 02	
0188	REF 2	LAST 1433	4000		SETLOC PPTAG4	
0189			5475		BANK	
0190	REF 37	LAST 1455	0061		EBANK= ITEMPI	
0191	REF 1				COUNT* \$S/TRAN	
0192			5475	0 0004 0	GENTRAN INHINT	
0193	REF 38	LAST 1458	5476	54 061 1	TS ITEMPI	SAVE N-1.
0194	REF 346	LAST 1458	5477	50 002 0	INDEX 0	C(Q) = ADRES L.
0195			5500	6 0000 1	AD 0	ADRES (L + N - 1).
0196	REF 419	LAST 1458	5501	50 000 1	INDEX A	
0197			5502	3 0000 1	CA 0	C(ABOVE).
0198	REF 248	LAST 1458	5503	54 001 1	TS L	SAVE DATA.
0199	REF 39	LAST 1458	5504	3 0081 0	CA ITEMPI	
0200	REF 349	LAST 1458	5505	50 002 0	INDEX 0	
0201			5508	6 0001 0	AD 1	ADRES (M + N - 1).
0202	REF 420	LAST 1458	5507	50 000 1	INDEX A	
0203			5510	22 000 1	LXCH 0	STUFF IT.
0204	REF 40	LAST 1458	5511	10 061 1	CCS ITEMPI	LOOP UNTIL N-1 = 0.
0205	REF 13	LAST 785	5512	1 5478 0	TCF GENTRAN +1	
0207	REF 4	LAST 1372	5513	1 8710 0	TCF 0+2	RETURN TO CALLER.



L SERVICE ROUTINES

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P0208 B5OFF ZERO BIT 5 OF EXTVBACT, WHICH IS SET BY TESTXACT.

R0209 MAY BE USED AS NEEDED BY ANY EXTENDED VERB WHICH HAS DONE TESTXACT

				COUNT* \$\$/EXTVB	
0211	REP	1			
0212	REP	49	LAST 1446	5514 4 4706 0	B5OFF CS BITS
0213	REP	21	LAST 1433	5515 7 1044 1	MASK EXTVBACT
0214	REP	22	LAST 1459	5516 55-044 1	TS EXTVBACT
0215	REP	120	LAST 1451	5517 0 5112 0	TC ENDOPJOB



L SERVICE ROUTINES

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P0216 SUBROUTINES TO TURN OFF AND TURN ON TRACKER FAIL LIGHT.

0217			5520	0 0004 0	TRFAILON INHINT	
0218	REP	1	5521	4 7704 1	CS	OCT40200
0219	REP	46	5522	7 1038 1	MASK	DSPTAB +11D
0220	REP	57	5523	6 4674 0	AD	BIT15
0221	REP	47	5524	55*038 1	TS	DSPTAB +11D
02215	REP	37	5525	4 1331 0	CS	OPTMODES
02216	REP	55	5526	7 4704 1	MASK	BIT7
02217	REP	38	5527	27*331 0	ADS	OPTMODES
TO INSURE THAT OCCU FAIL WILL GO ON AGAIN IF IT WAS ON IN ADDITION TO TRACKER FAIL.						
0222			5530	0 0003 1	REQ	RELINT
0223	REP	350	5531	0 0002 0	TC	Q
0224			5532	0 0004 0	TRFAILON INHINT	
0225	REP	48	5533	4 1038 1	CS	DSPTAB +11D
0226	REP	2	5534	7 7704 1	MASK	OCT40200
0227	REP	49	5535	27*038 1	ADS	DSPTAB +11D
0228	REP	1	5536	1 5530 0	TCF	REQ
TURN ON						



L ALARM AND ABORT

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R0001 THE FOLLOWING SUBROUTINE MAY BE CALLED TO DISPLAY A NON-ABORTIVE ALARM CONDITION. IT MAY BE CALLED
R0003 EITHER IN INTERRUPT OR UNDER EXECUTIVE CONTROL.

R0004 CALLING SEQUENCE IS AS FOLLOWS:

R0005 TC ALARM
R0006 OCT AAANN ALARM NO. NN IN GENERAL AREA AAA.
R0007 (RETURNS HERE)

0006 5537 BLOCK 02
0009 REF 1 4000 SETLOC PPTAG7
0010 5537 BANK
0011 REF 6 LAST 362 0375 EBANK= FAILREG
0012 REF 1 COUNT 02/ALARM

R0013 ALARM TURNS ON THE PROGRAM ALARM LIGHT, BUT DOES NOT DISPLAY.

0014 5537 0 0004 0 ALARM INHINT
0015 REF 351 LAST 1460 5540 3 0002 0 CA 0
0016 REF 4 LAST 1384 5541 55=363 1 ALARM2 TS ALMCADR
0017 REF 352 LAST 1461 5542 50 002 0 INDEX 0
0018 5543 3 0000 1 CA 0
0019 REF 247 LAST 1456 5544 54 001 1 BORTENT TS L
0020 REF 37 LAST 1456 5545 3 0006 1 PRIORNT CA BBANK
00202 5546 0 0006 1 +1 EXTEND
00204 REF 26 LAST 1440 5547 04 007 1 ROR SUPERBANK
0021 REF 5 LAST 1461 5550 55=364 0 TS ALMCADR +1
0022 REF 353 LAST 1461 5551 3 0002 0 LARMENT CA 0
0023 REF 41 LAST 1456 5552 54 061 1 TS ITEMP1
0024 REF 9 LAST 1461 5553 10 375 1 CHKFAIL1 CCS FAILREG
0025 REF 1 5554 1 5557 1 TCP CHKFAIL2
0026 REF 10 LAST 1461 5555 22 375 0 LXCH FAILREG
0027 REF 1 5556 1 5571 0 TCP PROCLARM
0028 REF 11 LAST 1461 5557 10 376 1 CHKFAIL2 CCS FAILREG +1
0029 REF 1 5560 1 5563 0 TCP FAIL3
0030 REF 12 LAST 1461 5561 22 376 0 LXCH FAILREG +1
0031 REF 1 5562 1 5574 0 TCP MULTEXIT
0032 REF 13 LAST 1461 5563 3 0377 1 FAIL3 CA FAILREG +2
0033 REF 37 LAST 1201 5564 7 4672 1 MASK POSMAX
0034 REF 421 LAST 1456 5565 10 000 0 CCS A
0035 REF 1 5566 1 5600 0 TCP MULTFAIL
0036 REF 14 LAST 1461 5567 22 377 1 LXCH FAILREG +2

ADD SUPER BITS.

STORE RETURN FOR ALARM

IS ANYTHING IN FAILREG
YES TRY NEXT REG

TURN ALARM LIGHT ON FOR FIRST ALARM



L ALARM AND ABORT

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0037	REP	2	LAST 1461	5570	1 5574 0	TCP	MULTEXIT	
0038	REP	50	LAST 1460	5571	4 1036 1	PROCLARM	CS	DSPTAB +11D
0039	REP	2	LAST 1437	5572	7 5612 0	MASK		OCT40400
0040	REP	51	LAST 1462	5573	27=036 1	ADS		DSPTAB +11D
0041	REP	42	LAST 1461	5574	56 061 0	MULTEXIT	XCH	ITEMP1
0042				5575	0 0003 1	RELINT		
0043	REP	422	LAST 1461	5576	50 000 1	INDEX	A	
0044				5577	0 0001 0	TC	1	
0045	REP	248	LAST 1461	5600	3 0001 0	MULTIPAIL	CA	L
0046	REP	58	LAST 1460	5601	6 4674 0	AD		BIT15
0047	REP	15	LAST 1461	5602	54 377 0	TS		PAIRREG +2
0048	REP	3	LAST 1462	5603	1 5574 0	TCP	MULTEXIT	
R0049	PRIOLARM DISPLAYS V05N09 VIA PRIODSPR WITH 3 RETURNS TO THE USER FROM THE ASTRONAUT AT CALL LOC +1,+2,+3 AND							
R0051	AN IMMEDIATE RETURN TO THE USER AT CALL LOC +4. EXAMPLE FOLLOWS,							
A0052						CAP	OCTOX	ALARM CODE
A0053						TC	BANKCALL	
A0054						CADR	PRIOLARM	
A0055						...	...
A0056						...	...
A0057						...	...
A0058						TC	PHASCHNG	ASTRONAUT RETURN
A0059						OCT	X.1	IMMEDIATE RETURN TO USER, RESTART
								PHASE CHANGE FOR PRIO DISPLAY
0060				10,3671		BANK	10	
0061	REP	2	LAST 1433	10,2000		SETLOC	DISPLAYS	
0062				10,3671		BANK		
0063	REP	2	LAST 1433 TO 1453'	650	650*	COUNT	10/DSPLA	
0064				10,3671	0 0004 0	PRIOLARM	INHINT	
0065	REP	249	LAST 1462	10,3672	54 001 1	TS	L	* * * KEEP IN DISPLAY ROUTINES BANK
								SAVE ALARM CODE
0066	REP	24	LAST 1410	10,3673	3 0133 0	CA	BUF2	
0067	REP	6	LAST 1461	10,3674	55=363 1	TS	ALMCADR	2 CADR OF PRIOLARM USER
0068	REP	25	LAST 1462	10,3675	3 0134 1	CA	BUF2 +1	
0069	REP	1		10,3676	0 5546 0	TC	PRIORINT +1	* LEAVE L ALONE
0071				10,3677	77467 1	DEC	-200	*** DONT MOVE
0072	REP	5	LAST 759	10,3700	3 4743 0	CAP	V05N09	
0073	REP	1		10,3701	1 2632 0	TCP	PRIODSPR	
0074				5604		BLOCK	02	
0075	REP	2	LAST 1461	4000		SETLOC	FFTAG7	
0076				5604		BANK		

L ALARM AND ABORT

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0077 REP 2 LAST 1461 TO 1462' 37 37* COUNT 02/ALARM

0076 5604 0 0004 0 BAILOUT INHINT
0079 REP 354 LAST 1461 5605 3 0002 0 CA 0
0080 REP 7 LAST 1462 5606 55=383 1 TS ALMCADR

0081 REP 355 LAST 1463 5607 50 002 0 INDEX 0
0082 5610 3 0000 1 CAP 0
0083 REP 1 5611 0 5544 1 TC BORTENT
0084 5612 40400 1 OCT40400 OCT 40400

00845 5613 0 0004 0 INHINT
0085 REP 78 LAST 1447 5614 3 4711 1 WHIMPER CA TWO
00851 REP 17 LAST 1372 5615 6 0005 1 AD Z
00852 REP 1 5616 54 017 0 TS BRUPT
00853 5617 5 0017 1 RESUME
00854 REP 64 LAST 1433 5620 0 4574 0 TC POSTJUMP
00855 REP 3 LAST 254 5621 12841 1 CADR ENEMA
008552 5622 0 0004 0 POODOO INHINT
008553 REP 358 LAST 1483 5623 3 0002 0 CA 0
008554 REP 8 LAST 1463 5624 55=383 1 ABORT2 TS ALMCADR
008555 REP 357 LAST 1463 5625 50 002 0 INDEX 0
008556 5626 3 0000 1 CAP 0
008557 REP 2 LAST 1463 5627 0 5544 1 TC BORTENT
008558 5630 77770 1 OCT77770 OCT 77770
00856 REP 1 5631 3 4705 1 CA V37FLBIT
008561 REP 24 LAST 1418 5632 7 0103 1 MASK FLAGWRD7
008562 REP 423 LAST 1482 5633 10 000 0 CCS A
008563 REP 1 5634 0 5813 0 TC WHIMPER -1

00857 REP 248 LAST 1414 5835 0 4555 0 TC BANKCALL
00858 REP 2 LAST 180 5836 12474 0 CADR MR.KLEAN
00859 REP 2 LAST 1463 5837 0 5814 1 TC WHIMPER

0086 5640 0 0004 0 COCHOLE INHINT
0087 REP 358 LAST 1463 5641 3 0002 0 CA 0
0089 REP 1 5642 0 5824 1 TC ABORT2
0090 5643 01103 1 OCT1103 OCT 1103
0091 5644 0 0004 0 CURTAINS INHINT
0092 REP 359 LAST 1483 5845 3 0002 0 CA 0
0094 REP 2 LAST 1364 5646 0 5541 1 TC ALARM2
0095 5647 00217 0 OCT217 OCT 00217
0096 REP 9 LAST 1463 5650 0 1383 0 TC ALMCADR

0099 REP 121 LAST 1459 5112 DOALARM EQUALS ENDOFJOB
R0100 CALLING SEQUENCE FOR VARALARM

A0101 CAP (ALARM)
A0102 TC VARALARM

```

RESUME SENDS CONTROL HERE

DONT MOVE
IS AVERAGE G ON

YES. DONT DO POODOO. DO BAILOUT.

RETURN TO USER



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L ALARM AND ABORT

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R0103 VARALARM TURNS ON PROGRAM ALARM LIGHT BUT DOES NOT DISPLAY
0104 5651 0 0004 0 VARALARM INHINT

0105	REP 250	LAST 1462	5652 54 001 1	TS	L	SAVE USERS ALARM CODE
0106	REP 360	LAST 1463	5653 3 0002 0	CA	0	SAVE USERS 0
0107	REP 10	LAST 1463	5654 55=363 1	TS	ALMCADR	
0108	REP 2	LAST 1462	5655 0 5545 0	TC	PRICENT	
0109			5656 00014 1 OCT14	OCT	14	DONT MOVE
0110	REP 11	LAST 1464	5657 0 1363 0	TC	ALMCADR	RETURN TO USER
0111	REP 8	LAST 1456	5604	ABORT	EQUALS BAILOUT	*** TEMPORARY UNTIL ABORT CALLS OUT



L UPDATE PROGRAM

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R0001 PROGRAM NAME' P27
R0002 WRITTEN BY' KILROY/ DE WOLF

R0003 MOD NO' 6
R0004 MOD BY' KILROY
R0005 DATE' 01DEC67

R0006 LOG SECTION' UPDATE PROGRAM.

R0007 FUNCT. DESCR' P27 (THE UPDATE PROGRAM) PROCESSES COMMANDS AND DATA
R0008 INSERTIONS REQUESTED BY THE GROUND VIA UPLINK.
R0009 THE P27 PROGRAM WILL ACCEPT UPDATES
R0010 ONLY DURING P00 FOR THE LM, AND ONLY DURING P00,
R0011 P02, AND FRESH START FOR THE CSM

R0012 CALLING SEQ' PROGRAM IS INITIATED BY UPLINK ENTRY OF VERBS 70, 71, 72 AND 73.

R0014 SUBROUTINES' TESTXACT, NEWMODEX, NEWMODEX +3, GCODESPP, BANKCALL, FINDVAC, INTPRET, INTSTALL, TPAGREE,
R0016 INTWAKEU, ENDEXT, POSTJUMP, FALTON, NEWPHASE, PHASCHNG

R0017 NORMAL EXIT' TC ENDEXT

R0018 ALARM/ABORT' TC FALTON FOLLOWED BY TC ENDEXT

R0019 RESTARTS' P27 IS RESTART PROTECTED IN TWO WAYS...
R0020 1. PRIOR TO VERIFLAG INVERSION (WHICH IS CAUSED BY THE GROUND/ASTRONAUT'S VERIFICATION OF UPDATE
R0022 DATA BY SENDING A V33E WHEN V21N02 IS FLASHING)---
R0023 NO PROTECTION EXCEPT PRE-P27 MODE IS RESTORED, COAST + ALIGN DOWNLIST IS SELECTED AND UPLINK
R0025 ACTIVITY LIGHT IS TURNED OFF. (JUST AS IF A V34E WAS SENT DURING P27 DATA LOADS).
R0027 V70, V71, V72 OR V73 WILL HAVE TO BE COMPLETELY RESENT BY USER.
R0029 2. AFTER VERIFLAG INVERSION (WHEN UPDATE OF THE SPECIFIED ERASABLES IS BEING PERFORMED)---
R0031 PROTECTED AGAINST RESTARTS.

R0032 DEBRIS' UPBUFF (20D) TEMP STORAGE FOR ADDRESSES AND CONTENTS.
R0033 UPVERB (1) VERB NUMBER MINUS 70D (E.G. FOR V72, UPVERB = 72D - 70D = 2)
R0035 UPOLMOD (1) FOR MAJOR MODE INTERRUPTED BY P27.
R0036 COMPNUM (1) TOTAL NUMBER OF COMPONENTS TO BE TRANSMITTED.
R0038 UPCOUNT (1) ACTUAL NUMBER OF COMPONENTS RECEIVED.
R0039 UPTIME (1) SCRATCH, BUT USUALLY CONTAINS COMPONENT NUMBER TO BE CHANGED DURING VERIFY CYCLE
R0041 INPUT'

R0042 ENTRY' DESCRIPTION

R0043 V70XXXXXXXXXXXX (LIPTOFF TIME INCREMENT) DOUBLE PRECISION OCTAL TIME INCREMENT, XXXXX XXXXX,
R0045 IS ADDED TO TEPHEM, SUBTRACTED FROM AGC CLOCK (TIME2, TIME1), SUBTRACTED FROM CSM STATE
R0047 VECTOR TIME (TETCSM) AND SUBTRACTED FROM LEM STATE VECTOR TIME (TETLEM).
R0049 THE DP OCTAL TIME INCREMENT IS SCALED AT 2(28).



L UPDATE PROGRAM

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```

R0050 V71BIIIAAAE (CONTIGUOUS BLOCK UPDATE) II-2 OCTAL COMPONENTS,XXXXX,
R0051 XXXXXE ARE LOADED INTO ERASABLE STARTING AT ECADR, AAAA.
R0052 XXXXXE IT IS .GE. 3 .AND. .LE. 20D.,
R0053 AND (AAAA + II - 3) DOES NOT PRODUCE AN ADDRESS IN THE
R0054 9 NEXT BANK
R0055 SCALING IS SAME AS INTERNAL REGISTERS.

R0056 V72BIIIE (SCATTER UPDATE) (II-1)/2 OCTAL COMPONENTS,XXXXX, ARE
R0057 AAAAEXXXXXE LOADED INTO ERASABLE LOCATIONS, AAAA.
R0058 AAAAEXXXXXE IT IS .GE. 3 .AND. .LE. 19D, AND MUST BE ODD.
R0060 SCALING IS SAME AS INTERNAL REGISTERS.

R0061 V73BXXXXEXXXXXE (OCTAL CLOCK INCREMENT) DOUBLE PRECISION OCTAL TIME
R0062 INCREMENT XXXXX XXXXX, IS ADDED TO THE AGC CLOCK, IN
R0063 CENTISECONDS. SCALED AT (2)28.
R0064 THIS LOAD IS THE OCTAL EQUIVALENT OF V55.
R0065 OUTPUT' IN ADDITION TO THE ABOVE REGISTER LOADS, ALL UPDATES
R0066 COMPLEMENT BIT3 OF FLAGWORD7.
R0067 ADDITIONAL NOTES' VERB 71, JUST DEFINED ABOVE WILL BE USED TO PERFORM BUT NOT LIMITED TO THE FOLLOWING UPDATES--

R0069 1. CSM/LM STATE VECTOR UPDATE
R0072 2. REFSMAT UPDATE
R0073 THE FOLLOWING COMMENTS DELINEATE EACH SPECIAL UPDATE----

R0074 1. CSM/LM STATE VECTOR UPDATE(ALL DATA ENTRIES IN OCTAL)

R0075 ENTRIES' DATA DEFINITION' SCALE FACTORS'
R0077 V71E CONTIGUOUS BLOCK UPDATE VERB
R0078 21E NUMBER OF COMPONENTS FOR STATE VECTOR UPDATE
R0080 AAAAE ECADR OF UPSVFLAG
R0082 XXXXE STATE VECTOR IDENTIFIER' 00001 FOR CSM, 77776 FOR LEM - EARTH SPHERE OF INFLUENCE SCALING
R0083 00002 FOR CSM, 77775 FOR LEM - LUNAR SPHERE OF INFLUENCE SCALING
R0084 XXXXEXXXXXE X POSITION
R0086 XXXXEXXXXXE Y POSITION
R0088 XXXXEXXXXXE Z POSITION
R0090 XXXXEXXXXXE X VELOCITY
R0092 XXXXEXXXXXE Y VELOCITY
R0094 XXXXEXXXXXE Z VELOCITY
R0096 XXXXEXXXXXE TIME FROM AGC CLOCK ZERO
R0098 V33E VERB 33 TO SIGNAL THAT THE STATE VECTOR IS READY TO BE STORED.
R0144 2. REFSMAT(ALL DATA ENTRIES IN OCTAL)
R0145 ENTRIES' DATA DEFINITIONS' SCALE FACTORS'

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L UPDATE PROGRAM

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R0147 V71E CONTIGUOUS BLOCK UPDATE VERB
R0148 24E NUMBER OF COMPONENTS FOR REFSMAT UPDATE
R0150 AAAAE ECADR OF «REFSMAT»
R0152 XXXXXX00000E ROW 1 COLUMN 1 2(-1)
R0154 XXXXXX00000E ROW 1 COLUMN 2 2(-1)
R0156 XXXXXX00000E ROW 1 COLUMN 3 2(-1)
R0158 XXXXXX00000E ROW 2 COLUMN 1 2(-1)
R0160 XXXXXX00000E ROW 2 COLUMN 2 2(-1)
R0162 XXXXXX00000E ROW 2 COLUMN 3 2(-1)
R0164 XXXXXX00000E ROW 3 COLUMN 1 2(-1)
R0166 XXXXXX00000E ROW 3 COLUMN 2 2(-1)
R0168 XXXXXX00000E ROW 3 COLUMN 3 2(-1)
R0170 V33E VERB 33 TO SIGNAL THAT REFSMAT IS READY TO BE STORED.
0171 07,3717 BANK 07
0172 REP 4 LAST 538 43,2000 SETLOC EXTVERSB
0173 43,3722 BANK
0174 REP 13 LAST 741 E3,1708 EBANK= TEPHEM
0175 REP 1 COUNT* 33/P27
0176 REP 1 43,3722 3 4714 1 V70UPDAT CAP UP70 COMES HERE ON V70E
0177 REP 2 LAST 230 43,3723 1 3731 0 TCP V73UPDAT +1
0178 REP 1 43,3724 3 4712 1 V71UPDAT CAP UP71 COMES HERE ON V71E
0179 REP 3 LAST 1467 43,3725 1 3731 0 TCP V73UPDAT +1
0180 REP 1 43,3726 3 4711 1 V72UPDAT CAP UP72 COMES HERE ON V72E
0181 REP 4 LAST 1467 43,3727 1 3731 0 TCP V73UPDAT +1
0182 REP 1 43,3730 3 6214 0 V73UPDAT CAP UP73 COMES HERE ON V73E
0183 REP 1 43,3731 54 331 1 +1 TS UPVERBSV SAVE UPVERB UNTIL IT'S OK TO ENTER P27
0184 REP 18 LAST 261 43,3732 0 2076 1 TC TESTXACT GRAB DISPLAY IF AVAILABLE, OTHERWISE
A0185 TURN*OPERATOR ERROR* ON AND TERMINATEJOB
0186 REP 16 LAST 1372 43,3733 3 1011 0 CA MODREG CHECK IF UPDATE ALLOWED
0187 43,3734 0 0006 1 EXTEND FIRST CHECK FOR MODREG = +0, -0
0188 43,3735 1 3737 0 BZF +2 (+0 = P00, -0 = FRESH START)
0189 REP 1 43,3736 0 3747 0 TC CKDMORE NOW CHECK FOR PROGRAM WHICH CAN BE
A0190 INTERRUPTED BY P27.
0191 REP 19 LAST 1467 43,3737 31*011 0 CAE MODREG UPDATE ALLOWED.
0192 REP 2 LAST 70 43,3740 54 301 1 TS UPOLDMOD SAVE CURRENT MAJOR MODE
```



L UPDATE PROGRAM

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0193	REP	2	LAST	1467	43,3741	30	331	0	CAR	UPVERBSV	SET UPVERB TO INDICATE TO P27
0194	REP	2	LAST	70	43,3742	54	302	1	TS	UPVERB	WHICH EXTENDED VERB CALLED IT.
0195	REP	175	LAST	1454	43,3743	3	4712	1	CAP	ONE	
0196	REP	2	LAST	70	43,3744	54	303	0	TS	UPCOUNT	INITIALIZE UPCOUNT TO 1
0197	REP	65	LAST	1463	43,3745	0	4574	0	TC	POSTJUMP	LEAVE EXTENDED VERB BANK AND
0198	REP	1			43,3746	57364	1		CADR	UPPART2	GO TO UPDATE PROGRAM(P27) BANK.
0199	REP	16	LAST	1417	43,3747	4	0101	0	COMMON	CS	FLAGWRD5
0200	REP	33	LAST	1444	43,3750	7	4703	0	MASK	BITS	CHECK IF COMPUTER IS LOC
0201	REP	424	LAST	1463	43,3751	10	000	0	CCS	A	IS COMPUTER LOC OR AGC
0202	REP	1			43,3752	1	3760	1	UPPERLEN	TCF	UPERROR
0203	REP	79	LAST	1463	43,3753	4	4711	0	CS	TWO	ERROR- IT'S THE LEM + MODE IS NOT POO.
0204	REP	20	LAST	1467	43,3754	7	1011	1	MASK	MODREQ	
0205	REP	425	LAST	1466	43,3755	10	000	0	CCS	A	
0206	REP	2	LAST	1466	43,3756	1	3760	1	UPPERMC	TCF	UPERROR
0207											ERROR- IT'S THE CMC AND MODE IS NOT
0208	REP	361	LAST	1464	43,3757	0	0002	0	TC	Q	P00 OR P02.
											ALLOW UPDATE TO PROCEED
0209	REP	66	LAST	1466	43,3760	0	4574	0	UPERROR	TC	POSTJUMP
0210	REP	1			43,3761	57745	0		CADR	UPERROUT +2	TURN ON "OPERATOR ERROR" LIGHT
											GO TO COMMON UPDATE PROGRAM EXIT
0211	REP	285	LAST	1456		4714			UP70	EQUALS	ZERO
0212	REP	176	LAST	1466		4712			UP71	EQUALS	ONE
0213	REP	80	LAST	1466		4711			UP72	EQUALS	TWO
0214	REP	53	LAST	1450		6214			UP73	EQUALS	THREE
0215						04,3650				BANK	04
0216	REP	2	LAST	1300		27,2000				SETLOC	UPDATE2
0217						27,3364				BANK	
0218	REP	1								COUNT*	55/P27
0219					27,3364				UPPART2	EQUALS	
											UPDATE PROGRAM - PART 2
0220	REP	102	LAST	1414	27,3364	0	5301	0	TC	PHASCHNG	SET RESTART GROUP 6 TO RESTORE OLD MODE
0221					27,3365	07026	1		OCT	07026	AND DOWNLIST AND EXIT IF RESTART OCCURS.
0222					27,3366	30000	1		OCT	30000	PRIORITY SAME AS CHRPRIO
0223	REP	7	LAST	173		0304			EBANK=	UPBUFF	
0224	REP	1			27,3367	03675	0		2CADR	UPOUT +1	
0224	REP	1			27,3370	56100	0				
0225	REP	177	LAST	1466	27,3371	3	4712	1	CAP	ONE	
0226	REP	7	LAST	1067	27,3372	54	332	1	TS	DNLSTOOD	DOWNLIST
0227	REP	13	LAST	754	27,3373	0	5243	1	TC	NEWMODEX	SET MAJOR MODE = 27
0228					27,3374	00033	1		DEC	27	



L UPDATE PROGRAM

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0229 REP 3 LAST 1466 27,3375 50 302 0
0230 27,3376 1 3377 0
0231 27,3377 1 3402 0
0232 REP 1 27,3400 1 3405 1
0233 REP 2 LAST 1469 27,3401 1 3405 1
0234 REP 81 LAST 1468 27,3402 3 4711 1
0235 REP 4 LAST 173 27,3403 54 300 0
0236 REP 1 27,3404 1 3430 1

INDEX UPVERB
TCP +1
TCP +3
TCP QWELL1
TCP QWELL1
CA TWO
TS COMPNUMB
TCP QWELL2

BRANCH DEPENDING ON WHETHER THE UPDATE
VERB REQUIRES A FIXED OR VARIABLE NUMBER
V70 FIXED. (OF COMPONENTS.
V71 VARIABLE - GO GET NO. OF COMPONENTS
V72 VARIABLE - GO GET NO. OF COMPONENTS
V73 (AND V70) FIXED
SET NUMBER OF COMPONENTS TO 2.
GO GET THE TWO UPDATE COMPONENTS

0237 REP 1 27,3405 3 3500 1 QWELL1
0238 REP 726 LAST 1452 27,3406 54 156 1
0239 REP 1 27,3407 3 3501 0 +2
0240 REP 249 LAST 1463 27,3410 0 4555 0
0241 REP 13 LAST 623 27,3411 20465 1
0242 REP 1 27,3412 1 3675 1
0243 REP 3 LAST 1469 27,3413 1 3407 0
0244 REP 1 27,3414 0 3471 0
0245 REP 46 LAST 1363 27,3415 4 4711 0
0246 REP 6 LAST 1466 27,3416 6 0304 0
0247 27,3417 0 0006 1
0248 REP 4 LAST 1469 27,3420 6 3407 1
0249 REP 9 LAST 1469 27,3421 4 0304 1
0250 REP 1 27,3422 6 4376 1
0251 27,3423 0 0006 1
0252 REP 5 LAST 1469 27,3424 6 3407 1
0253 REP 10 LAST 1469 27,3425 30 304 0
0254 REP 5 LAST 1469 27,3426 54 300 0
0257 UPBUFF LOADING SEQUENCE

CAP ADUPBUFF
TS MPAC +2
CAP UPLOADV
TC BANKCALL
CADR GOKDSPF
TCP UPQUT4
TCP QWELL1 +2
TC CK4V32
CS BIT2
AD UPBUFF
EXTEND
BZMF QWELL1 +2
CS UPBUFF
AD UP21
EXTEND
BZMF QWELL1 +2
CAE UPBUFF
TS COMPNUMB

* REQUEST USER TO SEND NUMBER *
* OF COMPONENTS PARAMETER(II). *
(CK4V32 RETURNS HERE IF V32 ENCOUNTERED)
DISPLAY A FLASHING V21N01
TO REQUEST II.
V34 TERMINATE UPDATE(P27) RETURN

DATA OR V32 RETURN

IS II(NUMBER OF COMPONENTS PARAMETER)
.0E. 3 AND .1E. 20D.

SAVE II IN COMPNUMB

02571 REP 3 LAST 1466 27,3427 24 303 1
0258 REP 1 27,3430 3 3845 0 QWELL2
0259 REP 4 LAST 1469 27,3431 6 0303 1
0260 REP 727 LAST 1469 27,3432 54 156 1 +2
0261 REP 2 LAST 1469 27,3433 3 3501 0 +3
0262 REP 250 LAST 1469 27,3434 0 4555 0
0263 REP 14 LAST 1469 27,3435 20465 1
0264 REP 2 LAST 1469 27,3436 1 3675 1
0265 REP 2 LAST 1469 27,3437 1 3433 1
0266 REP 2 LAST 1469 27,3440 0 3471 0
0267 REP 5 LAST 1469 27,3441 4 0303 0
0268 REP 6 LAST 1469 27,3442 6 0300 1
0269 27,3443 0 0006 1
0270 REP 1 27,3444 6 3446 1
0272 REP 3 LAST 1469 27,3445 1 3427 1
0273 VERIFY SEQUENCE

INCR UPQCOUNT
CAP ADUPBFM1
AD UPQCOUNT
TS MPAC +2
CAP UPLOADV
TC BANKCALL
CADR GOKDSPF
TCP UPQUT4
TCP QWELL2 +3
TC CK4V32
CS UPQCOUNT
AD COMPNUMB
EXTEND
BZMF UPVERIFY
TCP QWELL2 -1

INCREMENT COUNT OF COMPONENTS RECEIVED.
CALCULATE LOCATION(ECADR) IN UPBUFF
WHERE NEXT COMPONENT SHOULD BE STORED.
PLACE ECADR INTO R3.
(CK4V32 RETURNS HERE IF V32 ENCOUNTERED)
DISPLAY A FLASHING V21N01
TO REQUEST DATA.
V34 TERMINATE UPDATE(P27) RETURN.
V33 PROCEED RETURN
DATA OR V32 RETURN
HAVE WE FINISHED RECEIVING ALL
THE DATA WE EXPECTED.

YES- GO TO VERIFICATION SEQUENCE
NO- REQUEST ADDITIONAL DATA.



L UPDATE PROGRAM

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0274 RESP 1 27,3446 3 3477 0 UPVERIFY CAP ADUPTEMP
0275 RESP 728 LAST 1469 27,3447 54 156 1 TS MPAC +2
0276 RESP 1 27,3450 3 3502 0 CAP UPVRPYNV
0277 RESP 251 LAST 1469 27,3451 0 4555 0 TC BANKCALL
0278 RESP 15 LAST 1469 27,3452 20465 1 CADR GOKDSPP
0279 RESP 3 LAST 1469 27,3453 1 3675 1 TCP UPQUT4
0280 RESP 1 27,3454 1 3503 0 TCP UPSTORE
0281 RESP 3 LAST 1469 27,3455 0 3471 0 TC CK4V32
0282 RESP 2 LAST 70 27,3456 3 0330 1 CA UPTIMP
0283 27,3457 0 0006 1 EXTEND
0284 RESP 2 LAST 1469 27,3460 6 3446 1 BZMF UPVERIFY
0285 RESP 3 LAST 1470 27,3461 4 0330 0 CS UPTIMP
0286 RESP 7 LAST 1469 27,3462 6 0300 1 AD COMPNMB
0289 RESP 82 LAST 1433 27,3463 6 4712 1 AD BIT1
0290 27,3464 0 0006 1 EXTEND
0291 RESP 3 LAST 1470 27,3465 6 3446 1 BZMF UPVERIFY
0292 RESP 2 LAST 1469 27,3466 3 3645 0 CAP ADUPTMP1
0293 RESP 4 LAST 1470 27,3467 6 0330 1 AD UPTIMP
0294 RESP 4 LAST 1469 27,3470 1 3432 0 TCP QWELL2 +2

0295 RESP 2 LAST 1468 27,3675 UPQUT4 EQUALS UPQUT +1
R0296 CHECK FOR VERB 32 SEQUENCE

0297 RESP 729 LAST 1470 27,3471 4 0154 0 CK4V32 CS MPAC
0298 RESP 57 LAST 1445 27,3472 7 4705 0 MASK BITS
0299 RESP 426 LAST 1468 27,3473 10 000 0 CCS A
0300 RESP 362 LAST 1468 27,3474 0 0002 0 TC 0
0301 RESP 363 LAST 1470 27,3475 50 002 0 INDEX 0
0302 27,3476 7 7771 0 TC 0 -6

0305 RESP 5 LAST 1470 27,3477 00330 1 ADUPTEMP ADRES UPTIMP
0306 RESP 11 LAST 1469 27,3500 00304 0 ADUPBUFF ADRES UPUBUFF
0307 27,3501 05201 1 UPLOADNV VN 2101
0308 27,3502 05202 1 UPVRPYNV VN 2102
0309 RESP 3 LAST 1174 4376 UP21 = MD1
03121 RESP 30 LAST 1435 4715 UPDTHAS EQUALS FIVE

R0313 PRE-STORE AND FAN TO APPROPRIATE BRANCH SEQUENCE

0314 27,3503 UPSTORE EQUALS
0315 27,3503 0 0004 0 INHINT

0316 RESP 25 LAST 1463 27,3504 30 103 0 CAE FLAGWRD7
0317 RESP 251 LAST 1464 27,3505 56 001 0 XCH L
0318 RESP 39 LAST 1448 27,3506 3 4710 0 CAP BIT3
0319 27,3507 0 0006 1 EXTEND
0320 RESP 17 LAST 1454 27,3510 06 001 0 RXOR LCHAN

PLACE ECADR WHERE COMPONENT NO. INDEX
IS TO BE STORED INTO R3.
(CK4V32 RETURNS HERE IF V32 ENCOUNTERED)
DISPLAY A FLASHING V21N02 TO REQUEST
DATA CORRECTION OR VERIFICATION.
V34 TERMINATE UPDATE(P27) RETURN
V33 DATA SENT IS GOOD. GO STORE IT.
COMPONENT NO. INDEX OR V32 RETURN
DOES THE COMPONENT NO. INDEX JUST SENT
SPECIFY A LEGAL COMPONENT NUMBER
NO, IT IS NOT POSITIVE NONZERO

NO
YES- BASED ON THE COMPONENT NO. INDEX
CALCULATE THE ECADR OF LOCATION IN
UPBUFF WHICH USER WANTS TO CHANGE.

COMES HERE ON V34 TO TERMINATE UPDATE

ON DATA RETURN FROM GOKDSPP
ON DATA RETURN FROM GOKDSPP THE CON-
TENTS OF MPAC = VERB. SO TEST FOR V32.
IT'S NOT A V32, IT'S DATA. PROCEED.

V32 ENCOUNTERED - GO BACK AND GET DATA

ADDRESS OF TEMP STORAGE FOR CORRECTIONS
ADDRESS OF UPDATE DATA STORAGE BUFFER
VERB 21 NOUN 01
VERB 21 NOUN 02
DEC 21 = MAX NO OF COMPONENTS +1

GROUND HAS VERIFIED UPDATE. STORE DATA.

INVERT VERIFLAG(BIT3 OF FLAGWRD7) TO
INDICATE TO THE GROUND(VIA DOWNLINK)
THAT THE V33(WHICH THE GROUND SENT TO
VERIFY THE UPDATE) HAS BEEN SUCCESSFULLY
RECEIVED BY THE UPDATE PROGRAM



L UPDATE PROGRAM

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0321	REP 26	LAST 1470	27,3511	54 103 1	TS	FLAGWDT	
0322	REP 103	LAST 1468	27,3512	0 5301 0	TC	PHASCHNG	SET RESTART GROUP 6 TO REDO THE UPDATE
0323			27,3513	0 04026 1	OCT	04026	DATA STORE IF A RESTART OCCURS.
0324			27,3514	0 0004 0	INHINT		(BECAUSE PHASCHNG DID A RELINT)
0325	REP 82	LAST 1469	27,3515	4 4711 0	CS	TWO	GO TO UPENDVAC IF INSTALL IS REQUIRED,
0326	REP 4	LAST 1469	27,3516	6 0302 0	AD	UPVERB	THAT IS, IF IT'S A V70 - V72.
0327			27,3517	0 0006 1	EXTEND		GO TO UPEND73 IF IT'S A V73.
0328	REP 1		27,3520	6 3527 1	BZMP	UPENDVAC	
R0330		VERB 73 BRANCH					
0331			27,3521	0 0006 1	UPEND73	EXTEND	V73-PERFORM DP OCTAL AGC CLOCK INCREMENT
0332	REP 12	LAST 1470	27,3522	3 0305 1	DCA	UPBUFF	
0333	REP 13	LAST 1471	27,3523	52 315 1	DXCH	UPBUFF +8D	
0334	REP 1		27,3524	0 3552 0	TC	TIMEDIDL	
0335	REP 7	LAST 356	27,3525	0 4400 1	TC	PALTON	ERROR- TURN ON *OPERATOR ERROR* LIGHT
0336	REP 3	LAST 1470	27,3526	0 3675 0	TC	UPOUT +1	GO TO COMMON UPDATE PROGRAM EXIT
0337	REP 7	LAST 1417	27,3527	3 4371 0	UPENDVAC	CAP	(USE EXTENDED VERB PRIORITY)
0338	REP 34	LAST 1446	27,3530	0 5042 1	TC	PINDVAC	GET VAC AREA FOR *CALL INSTALL*
0339	REP 14	LAST 1467	E3,1706		EBANK=	TEPHEN	
0340	REP 1		27,3531	0 3534 0	ZCADR	UPJOB	(NOTE) THIS WILL ALSO SET EBANK FOR
0340	REP 1		27,3532	56103 0			*TEPHEN* UPDATE BY V70)
0341	REP 122	LAST 1463	27,3533	0 5112 0	TC	ENDOFJOB	
0342	REP 245	LAST 1336	27,3534	0 6006 1	UPJOB	TC	THIS COULD BE A STATE VECTOR UPDATE--SO
0343			27,3535	77624 1	CALL	INTPRET	WAIT(PUT JOB TO SLEEP) IF ORBIT INT(OI)
0344	REP 32	LAST 1298	27,3536	27371 1		INTSTALL	IS IN PROGRESS--OR--GRAB OI AND RETURN
A0345							TO UPWAKE IF OI IS NOT IN PROGRESS.
0346			27,3537	77776 1	UPWAKE	EXIT	
0347	REP 104	LAST 1471	27,3540	0 5301 0	TC	PHASCHNG	RESTART PROTECT(GROUP 6)
0348			27,3541	0 04026 1	OCT	04026	
0350	REP 55	LAST 1444	27,3542	0 5435 0	TC	UPFLAG	SET INTEGRATION RESTART BIT
0351	REP 5	LAST 1317	27,3543	0 0236 0	ADRES	REINTFLO	
0352			27,3544	0 0004 0	INHINT		
0355			27,3545		UPPART3	EQUALS	
0356	REP 5	LAST 1471	27,3545	50 302 0	INDEX	UPVERB	BRANCH TO THE APPROPRIATE UPDATE VERB
0357			27,3546	1 3547 0	TCF	+1	ROUTINE TO ACTUALLY PERFORM THE UPDATE
0358	REP 1		27,3547	1 3706 1	TCF	UPEND70	V70
0359	REP 1		27,3550	1 3615 1	TCF	UPEND71	V71
0360	REP 1		27,3551	1 3647 0	TCF	UPEND72	V72
R0361		ROUTINE TO INCREMENT CLOCK(TIME2, TIME1) WITH CONTENTS OF DP WORD AT UPBUFF.					



L UPDATE PROGRAM

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0363			27,3552	0 0008 1	TIMEDIDL	EXTEND		
0364	REF 6	LAST 1470	27,3553	22 330 1	DXCH	UPTMP	SAVE 0 FOR RETURN	
0365	REF 266	LAST 1466	27,3554	3 4714 1	CAP	ZERO	ZERO AND SAVE TIME2, TIME1	
0366			27,3555	22 007 0	ZL			
0367	REF 34	LAST 1416	27,3556	52 025 1	DXCH	TIME2		
0368	REF 14	LAST 1471	27,3557	52 327 0	DXCH	UPBUFF +18D	STORE IN CASE OF OVERFLOW	
0369	REF 1		27,3560	3 4715 0	CAP	UPOTPHAS	DO	
0370	REF 252	LAST 1470	27,3561	54 001 1	TS	L	A	
0371			27,3562	4 0000 0	COM		QUICK	
03711	REF 3	LAST 652	27,3563	52 765 1	DXCH	-PHAS6	PHASCHNG	
0372			27,3564	0 0004 0	TIMEDIDL	INHINT		
0373	REF 267	LAST 1472	27,3565	3 4714 1	CAP	ZERO		
0374			27,3566	22 007 0	ZL		PICK UP INCREMENTER(AND ZERO	
0375	REF 730	LAST 1470	27,3567	54 156 1	TS	MPAC +2	IT IN CASE OF RESTARTS) AND	
0376	REF 15	LAST 1472	27,3570	52 315 1	DXCH	UPBUFF +8D	STORE IT	
0377	REF 731	LAST 1472	27,3571	52 155 1	DXCH	MPAC	INTO MPAC FOR TPAGREE.	
0378			27,3572	0 0008 1	EXTEND			
0379	REF 16	LAST 1472	27,3573	3 0327 1	DCA	UPBUFF +18D		
0380	REF 732	LAST 1472	27,3574	20 155 1	DAS	MPAC	FORM SUM IN MPAC	
0381			27,3575	0 0008 1	EXTEND			
0382	REF 1		27,3576	1 3805 0	BZF	DELTATOK	TEST FOR OVERFLOW	
0383	REF 268	LAST 1472	27,3577	3 4714 1	CAP	ZERO		
0384	REF 17	LAST 1472	27,3600	52 327 0	DXCH	UPBUFF +18D	OVERFLOW, RESTORE OLD VALUE OF CLOCK	
0385	REF 35	LAST 1472	27,3601	20 025 1	DAS	TIME2	AND TURN ON OPERATOR ERROR	
0386	REF 105	LAST 1471	27,3602	0 5301 0	TC	PHASCHNG	RESTART PROTECT(GROUP 6)	
0387			27,3603	04026 1	OCT	04026		
0388	REF 7	LAST 1472	27,3604	0 0330 1	TC	UPTMP	GO TO ERROR EXIT	
0389	REF 14	LAST 1416	27,3605	0 7226 0	DELTATOK	TC	TPAGREE	FORCE SIGN AGREEMENT
0390	REF 733	LAST 1472	27,3606	52 155 1	DXCH	MPAC		
0391	REF 36	LAST 1472	27,3607	20 025 1	DAS	TIME2	INCREMENT TIME2, TIME1	
0392	REF 106	LAST 1472	27,3610	0 5301 0	TC	PHASCHNG	RESTART PROTECT(GROUP 6)	
0393			27,3611	04026 1	OCT	04026		
0394			27,3612	0 0004 0	INHINT			
0395	REF 6	LAST 1472	27,3613	50 330 1	INDEX	UPTMP	(CODED THIS WAY FOR RESTART PROTECTION)	
0396			27,3614	0 0001 0	TC	1	NORMAL RETURN	
R0397		VERB 71 BRANCH						
0402	REF 16	LAST 1472	27,3615	30 305 1	UPEND71	CAE	UPBUFF +1	SET ERANK
0403	REF 66	LAST 1443	27,3616	54 003 0	TS	ERANK	AND	
0404	REF 17	LAST 1403	27,3617	7 4373 0	MASK	LOW6	CALCULATE	
0405	REF 9	LAST 1472	27,3620	54 330 0	TS	UPTMP	S-REG VALUE OF RECEIVING AREA	

L UPDATE PROGRAM

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0406 REP 5 LAST 1403 27,3621 6 7714 1
0407 REP 8 LAST 1470 27,3622 6 0300 1
0408 27,3623 0 0006 1
0409 REP 1 27,3624 1 3632 1
0410 REP 39 LAST 1435 27,3625 7 4702 1
0411 REP 427 LAST 1470 27,3626 10 000 0
0412 REP 2 LAST 1466 27,3627 1 3743 0

AD NEG3
AD COMPNUMB
EXTEND
BZF STORLP71
MASK BIT9
CCS A
TCP UPERROUT

IN THE PROCESS OF
PERFORMING
THIS UPDATE
WILL WE
OVERFLOW
INTO THE NEXT EBANK....
YES

0413 REP 6 LAST 1473 27,3630 3 7714 1
0414 REP 9 LAST 1473 27,3631 6 0300 1
0415 REP 734 LAST 1472 27,3632 54 154 0
0416 REP 428 LAST 1473 27,3633 50 000 1
0417 REP 19 LAST 1472 27,3634 3 0308 1
0418 REP 253 LAST 1472 27,3635 54 001 1
0419 REP 735 LAST 1473 27,3636 3 0154 1
0420 REP 10 LAST 1472 27,3637 6 0330 1
0421 REP 429 LAST 1473 27,3640 50 000 1

CA NEG3
AD COMPNUMB
STORLP71 TS MPAC
INDEX A
CA UPBUFF +2
TS L
CA MPAC
AD UPTEMP
INDEX A

NO- CALCULATE NUMBER OF
WORDS TO BE STORED MINUS ONE
SAVE NO. OF WORDS REMAINING MINUS ONE
TAKE NEXT UPDATE WORD FROM
UPBUFF AND
SAVE IT IN L
CALCULATE NEXT
RECEIVING ADDRESS

0422 REP 429 LAST 1473 27,3640 50 000 1
0423 27,3641 23=400 1
0424 REP 15 LAST 1471 27,3642 10 154 0
0425 REP 736 LAST 1473 27,3643 1 3632 1
0426 REP 2 LAST 1473 27,3644 1 3674 0
0427 REP 4 LAST 1471 27,3645 00303 1
0428 REP 20 LAST 1473 27,3646 1 3674 0
0429 REP 5 LAST 1473 27,3646 1 3674 0
R0430 VERB 72 BRANCH

EBANK= 1400
LXCH 1400
EBANK= TERNEM
CCS MPAC
TCP STORLP71
TCP UPOUT
ADUPBPM1 ADRES UPBUFF -1
TCP UPOUT

UPDATE THE REGISTER BY CONTENTS OF L
ARE THERE ANY WORDS LEFT TO BE STORED
YES
NO- THEN EXIT UPDATE PROGRAM
SAME AS ADUPBUFF BUT LESS 1 (DON'T MOVE)
NO- EXIT UPDATE(HERE WHEN COMPNUMB = 3)

0431 REP 63 LAST 1470 27,3647 3 4712 1
0432 REP 10 LAST 1473 27,3650 7 0300 0
0433 REP 430 LAST 1473 27,3651 10 000 0
0434 27,3652 1 3654 1
0435 REP 3 LAST 1473 27,3653 1 3743 0
0451 REP 47 LAST 1469 27,3654 4 4711 0
0452 REP 11 LAST 1473 27,3655 6 0300 1
0453 REP 737 LAST 1473 27,3656 54 154 0
0454 REP 431 LAST 1473 27,3657 50 000 1
0455 REP 21 LAST 1473 27,3660 30 305 1
0456 REP 432 LAST 1473 27,3661 22 000 1
0457 REP 738 LAST 1473 27,3662 10 154 0
0458 REP 739 LAST 1473 27,3663 54 154 0
0459 REP 433 LAST 1473 27,3664 50 000 1
0460 REP 22 LAST 1473 27,3665 30 305 1
0461 REP 67 LAST 1472 27,3666 54 003 0
0462 REP 18 LAST 1472 27,3667 7 4373 0
0463 REP 434 LAST 1473 27,3670 50 000 1
0464 27,3671 23=400 1
0465 27,3671 23=400 1
0466 REP 16 LAST 1473 27,3670 50 000 1

UPEND72 CAP BIT1
MASK COMPNUMB
CCS A
TCP +2
TCP UPERROUT
CS BIT2
AD COMPNUMB
LDLOOP72 TS MPAC
INDEX A
CAE UPBUFF +1
LXCH A
CCS MPAC
TS MPAC
INDEX A
CAE UPBUFF +1
TS EBANK
MASK LOW8
INDEX A
EBANK= 1400
LXCH 1400
EBANK= TERNEM

HAVE AN ODD NO. OF COMPONENTS
BEEN SENT FOR A V72 UPDATE....
YES
ERROR- SHOULD BE ODD NO. OF COMPONENTS
NOW PERFORM THE UPDATE
PICK UP NEXT UPDATE WORD
SET POINTER TO ECADR(MUST BE CCS)
PICK UP NEXT ECADR OF REG TO BE UPDATED
SET EBANK
ISOLATE RELATIVE ADDRESS
UPDATE THE REGISTER BY CONTENTS OF L



L UPDATE PROGRAM

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0467	REP	740	LAST 1473	27,3872	10 154 0	CCS	MPAC	ARE WE THROUGH THE V72 UPDATE...
0468	REP	1		27,3873	1 3656 0	TOP	LDLOOP72	NO
0469			NORMAL FINISH OF P27					
0470				27,3874		UPOUT	EQUALS	
0471	REP	1		27,3874	0 2662 1	TC	INTWAKEU	RELEASE GRAB OF ORBITAL INTEGRATION
0472	REP	3	LAST 1467	27,3875	30 301 0	CAB	UPOLDMOD	RESTORE PRIOR P27 MODE
0473	REP	14	LAST 1468	27,3876	0 5246 1	TC	NEWMODEX +3	
0474	REP	269	LAST 1472	27,3877	3 4714 1	CAP	ZERO	
0475	REP	8	LAST 1466	27,3700	54 332 1	TS	DNLSTOOD	
0476	REP	3	LAST 563	27,3701	0 3750 0	TC	UPACTOFF	TURN OFF "UPLINK ACTIVITY" LIGHT
0477				27,3702	0 0006 1	EXTEND		
0478	REP	17	LAST 1392	27,3703	3 4714 1	DCA	NEGO	KILL GROUP 6.
0479	REP	4	LAST 1472	27,3704	52 765 1	DXCH	-PHASE8	
0480	REP	36	LAST 691	27,3705	0 5423 1	TC	ENDEXT	EXTENDED VERR EXIT
0481			VERB 70 BRANCH					
0482				27,3706	0 0006 1	UPEND70	EXTEND	
0483	REP	23	LAST 1473	27,3707	4 0305 0	DCS	UPBUFF	V70 DOES THE FOLLOWING WITH DP DELTA
0484	REP	24	LAST 1474	27,3710	52 315 1	DXCH	UPBUFF +8D	TIME IN UPBUFF
0485	REP	2	LAST 1471	27,3711	0 3552 0	TC	TIMEDIDL	DECREMENT AGC CLOCK
0486	REP	4	LAST 1473	27,3712	0 3743 1	TC	UPERROUT	ERROR WHILE DECREMENTING CLOCK -- EXIT
0487	REP	17	LAST 1473	27,3708		EBANK=	TEPHEN	
0488				27,3713	0 0006 1	EXTEND		
0489	REP	25	LAST 1474	27,3714	4 0305 0	DCS	UPBUFF	COPY DECREMENTERS FOR
0490	REP	26	LAST 1474	27,3715	52 317 0	DXCH	UPBUFF +10D	RESTART PROTECTION
0491				27,3716	0 0006 1	EXTEND		
0492	REP	27	LAST 1474	27,3717	4 0305 0	DCS	UPBUFF	
0493	REP	26	LAST 1474	27,3720	52 321 0	DXCH	UPBUFF +12D	
0494	REP	107	LAST 1472	27,3721	0 5301 0	TC	PHASCHNG	RESTART PROTECTNGROUP 6)
0495				27,3722	04026 1	OCT	04026	
0496	REP	290	LAST 1474	27,3723	3 4714 1	CAP	ZERO	
0497				27,3724	22 007 0	ZL		
0498	REP	29	LAST 1474	27,3725	52 317 0	DXCH	UPBUFF +10D	DECREMENT CSM STATE VECTOR TIME
0499	REP	3	LAST 204	27,3726	21*571 1	DAS	TETCSM	
0500	REP	291	LAST 1474	27,3727	3 4714 1	CAP	ZERO	
0501				27,3730	22 007 0	ZL		
0502	REP	30	LAST 1474	27,3731	52 321 0	DXCH	UPBUFF +12D	DECREMENT LEM STATE VECTOR TIME
0503	REP	3	LAST 64	27,3732	21*643 0	DAS	TEILEM	

L UPDATE PROGRAM

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0504	REF	292	LAST	1474	27,3733	3 4714 1	CAP	ZERO	
0505					27,3734	22 007 0	ZL		
0506	REF	31	LAST	1474	27,3735	52 305 0	DXCH	UPBUFF	
0507	REF	18	LAST	1474	27,3736	21=710 1	DAS	TEPHEN +1	INCREMENT TP TEPHEN
0508	REF	19	LAST	1475	27,3737	27=708 0	ADS	TEPHEN	
0509	REF	108	LAST	1474	27,3740	0 5301 0	TC	PHASCHNG	RESTART PROTECT(GROUP 6)
0510					27,3741	04028 1	OCT	04028	
0511	REF	32	LAST	1475		0304	EBANK=	UPBUFF	
0512	REF	6	LAST	1473	27,3742	0 3874 1	TC	UPOUT	GO TO STANDARD UPDATE PROGRAM EXIT
R0513						ERROR SEQUENCE			
0514	REF	8	LAST	1471	27,3743	0 4400 1	UPERROUT TC	FALTON	TURN ON *OPERATOR ERROR* LIGHT
0515	REF	7	LAST	1475	27,3744	1 3874 0	TCF	UPOUT	GO TO COMMON UPDATE PROGRAM EXIT
0516	REF	9	LAST	1475	27,3745	0 4400 1	+2 TC	FALTON	TURN ON *OPERATOR ERROR* LIGHT
0517	REF	4	LAST	1474	27,3746	0 3750 0	TC	UPACTOFF	TURN OFF *UPLINK ACTIVITY* LIGHT
0518	REF	39	LAST	1474	27,3747	0 5423 1	TC	ENDEXT	EXTENDED VERB EXIT
A0519									(THE PURPOSE OF UPERROUT +2 EXIT IS
A0520									TO PROVIDE AN ERROR EXIT WHICH DOES NOT
A0521									RESET ANY RESTART GROUPS)
A0522									
R0523									'UPACTOFF' IS A ROUTINE TO TURN OFF UPLINK ACTIVITY LIGHT ON ALL EXITS FROM UPDATE PROGRAM(P27).
0525	REF	40	LAST	1470	27,3750	4 4710 1	UPACTOFF CS	BIT3	
0527					27,3751	0 0006 1	EXTEND		TURN OFF UPLINK ACTIVITY LIGHT
0528	REF	36	LAST	1446	27,3752	03 011 1	WAND	DSALMOUT	(BIT 3 OF CHANNEL 11)
0530	REF	364	LAST	1470	27,3753	0 0002 0	TC	Q	



L RTB OF CODES

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0001 22,3505 BANK 22
0002 REP 1 22,2000 SETLOC RTBCODES
0003 22,3505 BANK
0004 REP 13 LAST 1327 E5,1713 EBANK= XNB
0005 REP 1 COUNT* \$\$/RTB

R0006 LOAD TIME₂, TIME₁ INTO MPAC'

0007 22,3505 0 0006 1 LOADTIME EXTEND
0008 REP 37 LAST 1472 22,3506 3 0025 0 DCA TIME₂
0009 REP 2 LAST 1094 22,3507 1 6024 0 TCP SLOAD₂

R0010 CONVERT THE SINGLE PRECISION 2-S COMPLEMENT NUMBER ARRIVING IN MPAC (SCALED IN HALF-REVOLUTIONS) TO A
R0012 DP 1-S COMPLEMENT NUMBER SCALED IN REVOLUTIONS.

0016 REP 741 LAST 1474 22,3510 10 154 0 CDULOGIC CCS MPAC
0017 REP 293 LAST 1475 22,3511 3 4714 1 CAP ZERO
0018 22,3512 1 3515 1 TCP +3
0019 22,3513 13 514 0 NOOP
0020 REP 25 LAST 1177 22,3514 4 4675 0 CS HALF
0021 REP 742 LAST 1476 22,3515 54 155 1 TS MPAC +1
0022 REP 294 LAST 1476 22,3516 3 4714 1 CAP ZERO
0023 REP 743 LAST 1476 22,3517 56 154 1 XCH MPAC
0024 22,3520 0 0006 1 EXTEND
0025 REP 26 LAST 1476 22,3521 7 4675 0 MP HALF
0026 REP 744 LAST 1476 22,3522 20 155 1 DAS MPAC
0027 REP 68 LAST 1355 22,3523 1 6030 0 TCP DANZIG

MODE IS ALREADY AT DOUBLE-PRECISION

R0040 READ THE PIPS INTO MPAC WITHOUT CHANGING THEM'

0041 22,3524 0 0004 0 READPIPS INHINT
0042 REP 13 LAST 1397 22,3525 3 0037 0 CA PIPAX
0043 REP 745 LAST 1476 22,3526 54 154 0 TS MPAC
0044 REP 4 LAST 1397 22,3527 3 0040 0 CA PIPAY
0045 REP 746 LAST 1476 22,3530 54 157 0 TS MPAC +3
0046 REP 7 LAST 1397 22,3531 3 0041 1 CA PIPAZ
0047 22,3532 0 0003 1 RELINT
0048 REP 747 LAST 1476 22,3533 54 161 0 TS MPAC +5
0049 REP 295 LAST 1476 22,3534 3 4714 1 CAP ZERO
0050 REP 748 LAST 1476 22,3535 54 155 1 TS MPAC +1
0051 REP 749 LAST 1476 22,3536 54 160 1 TS MPAC +4
0052 REP 750 LAST 1476 22,3537 54 162 0 TS MPAC +6
0053 REP 3 LAST 1152 22,3540 1 6470 0 VECMODE TCP VMODE
R0054 FORCE TP SIGN AGREEMENT IN MPAC'
0055 REP 15 LAST 1472 22,3541 0 7226 0 SQNAGREE TC TPAGREE



L RTB OP CODES

USER'S PAGE NO. 2 E5 S4

0056 REF 69 LAST 1476 22,3542 1 6030 0 TCP DANZIG

R0057 CONVERT THE DP 1=S COMPLEMENT ANGLE SCALED IN REVOLUTIONS TO A SINGLE PRECISION 2=S COMPLEMENT ANGLE
R0059 SCALED IN HALF-REVOLUTIONS.

0060	REF	1		22,3543	0	3573	0	1STO2S	TC	1TO2SUB
0061	REF	296	LAST 1476	22,3544	3	4714	1		CAP	ZERO
0062	REF	751	LAST 1476	22,3545	54	155	1		TS	MPAC +1
0063	REF	5	LAST 1122	22,3546	1	6027	0		TCP	NEWMODE

R0064 DO 1STO2S ON A VECTOR OF ANGLES'

0065	REF	2	LAST 1477	22,3547	0	3573	0	V1STO2S	TC	1TO2SUB
0066	REF	752	LAST 1477	22,3550	52	162	0		DXCH	MPAC +5
0067	REF	753	LAST 1477	22,3551	52	155	1		DXCH	MPAC
0068	REF	3	LAST 1477	22,3552	0	3573	0		TC	1TO2SUB
0069	REF	754	LAST 1477	22,3553	54	156	1		TS	MPAC +2

ANSWER ARRIVES IN A AND MPAC.

0070	REF	755	LAST 1477	22,3554	52	160	1		DXCH	MPAC +3
0071	REF	756	LAST 1477	22,3555	52	155	1		DXCH	MPAC
0072	REF	4	LAST 1477	22,3556	0	3573	0		TC	1TO2SUB
0073	REF	757	LAST 1477	22,3557	54	155	1		TS	MPAC +1

0074	REF	758	LAST 1477	22,3560	3	0161	1		CA	MPAC +5
0075	REF	759	LAST 1477	22,3561	54	154	0		TS	MPAC

0076	REF	178	LAST 1468	22,3562	3	4712	1	TRMODE	CAP	ONE
0077	REF	6	LAST 1477	22,3563	1	6027	0		TCP	NEWMODE

MODE IS TP.

R0078 V1STO2S FOR 2 COMPONENT VECTOR. USED BY RR.

0079	REF	5	LAST 1477	22,3564	0	3573	0	ZV1STO2S	TC	1TO2SUB
0080	REF	760	LAST 1477	22,3565	52	160	1		DXCH	MPAC +3
0081	REF	761	LAST 1477	22,3566	52	155	1		DXCH	MPAC
0082	REF	6	LAST 1477	22,3567	0	3573	0		TC	1TO2SUB
0083	REF	254	LAST 1473	22,3570	54	001	1		TS	L
0084	REF	762	LAST 1477	22,3571	3	0157	1		CA	MPAC +3
0085	REF	3	LAST 1476	22,3572	1	6024	0		TCP	SLOAD2

R0086 SUBROUTINE TO DO DOUBLING AND 1=S TO 2=S CONVERSION'

0087	REF	763	LAST 1477	22,3573	52	155	1	1TO2SUB	DXCH	MPAC
0088				22,3574	20	001	1		DOUBL	
0089	REF	435	LAST 1473	22,3575	10	000	0		CUS	A
0090	REF	179	LAST 1477	22,3576	6	4712	1		AD	ONE
0091				22,3577	1	3601	1		TCP	+2
0092				22,3600	4	0000	0		COM	

FINAL MPAC +1 UNSPECIFIED.

0093	REF	764	LAST 1477	22,3601	54	154	0		TS	MPAC
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THIS WAS REVERSE OF MSJ.

AND SKIP ON OVERFLOW.



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L RTB OF CODES

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0094	REF 365	LAST 1475	22,3602	0 0002 0	TC	Q
0095	REF 436	LAST 1477	22,3603	50 000 1	INDEX	A
0096	REF 8	LAST 1177	22,3604	3 4673 1	CAP	LIMITS
0097	REF 785	LAST 1477	22,3605	26 154 0	ADS	MPAC
0098	REF 366	LAST 1478	22,3606	0 0002 0	TC	Q

OVERFLOW UNCORRECT AND IN MSJ.



L RTB OP CODES

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P0099 SUBROUTINE TO INCREMENT CDUS

0102	REF	1		22,3607	3 3622 1	INCRCDUS	CAP	LOCTHETA
0103	REF	127	LAST 1336	22,3610	54 130 1		TS	BUF
0104	REF	766	LAST 1476	22,3611	30 154 1		CAB	MPAC
0105	REF	1		22,3612	0 3623 0		TC	CDUINC

PLACE ADRES(THETA) IN BUF.
INCREMENT IN 1S COMPL.

0106	REF	126	LAST 1479	22,3613	24 130 0		INCR	BUF
0107	REF	767	LAST 1479	22,3614	30 157 1		CAB	MPAC +3
0108	REF	2	LAST 1479	22,3615	0 3623 0		TC	CDUINC

0109	REF	129	LAST 1479	22,3616	24 130 0		INCR	BUF
0110	REF	768	LAST 1479	22,3617	30 161 1		CAB	MPAC +5
0111	REF	3	LAST 1479	22,3620	0 3623 0		TC	CDUINC

0112	REF	1		22,3621	1 3540 1		TCF	VECMODE
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0113	REF	23	LAST 1392	22,3622	01155 1	LOCTHETA ADRES	THETAD	
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R0114 THE FOLLOWING ROUTINE INCREMENTS IN 2S COMPLEMENT THE REGISTER WHOSE ADDRESS IS IN BUF BY THE 1S COMPL.
R0116 QUANTITY FOUND IN TEM2. THIS MAY BE USED TO INCREMENT DESIRED IMU AND OPTICS CDU ANGLES OR ANY OTHER 2S COMPL.
R0116 (+0 UNEQUAL TO -0) QUANTITY. MAY BE CALLED BY BANKCALL/SWCALL.

0119	REF	6	LAST 1334	22,3623	54 142 1	CDUINC	TS	TEM2
0120	REF	130	LAST 1479	22,3624	50 130 0		INDEX	BUF
0121				22,3625	10 000 0		CCS	0
0122	REF	160	LAST 1477	22,3626	6 4712 1		AD	ONE
0123				22,3627	1 3633 0		TCF	+4
0124	REF	161	LAST 1479	22,3630	6 4712 1		AD	ONE
0125	REF	162	LAST 1479	22,3631	6 4712 1		AD	ONE
0126				22,3632	4 0000 0		COM	

1S COMPL. QUANT. ARRIVES IN ACC. STORE IT

CHANGE 2S COMPL. ANGLE(IN BUF) INTO 1S

OVERFLOW HERE IF 2S COMPL. IS 160 DEG.

0127	REF	7	LAST 1479	22,3633	6 0142 0		AD	TEM2
0129	REF	437	LAST 1476	22,3634	10 000 0		CCS	A
0130	REF	163	LAST 1479	22,3635	6 4712 1		AD	ONE
0131				22,3636	1 3640 1		TCF	+2
0132				22,3637	4 0000 0		COM	
0133	REF	6	LAST 1479	22,3640	54 142 1		TS	TEM2
0134				22,3641	1 3645 1		TCF	+4
0135	REF	438	LAST 1479	22,3642	50 000 1		INDEX	A
0137	REF	9	LAST 1476	22,3643	3 4673 1		CAP	LIMITS
0138	REF	9	LAST 1479	22,3644	6 0142 0		AD	TEM2

SULT MOVES FROM 2ND TO 3D QUAD.(OR BACK)
BACK TO 2S COMPL.

STORE 14BIT QUANTITY WITH PRESENT SIGN

SIGN.
FIX IT, BY ADDING IN 37777 OR 40000

0139	REF	131	LAST 1479	22,3645	50 130 0		INDEX	BUF
0140				22,3646	54 000 0		TS	0
0141	REF	367	LAST 1476	22,3647	0 0002 0		TC	0

STORE NEW ANGLE IN 2S COMPLEMENT.



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P0142

RTB TO TORQUE GYROS, EXCEPT FOR THE CALL TO IMSTALL. ECADR OF COMMANDS ARRIVES IN X1.

0144	REF	41	LAST 1294	22,3650	50 120 1	PULSEIMU INDEX	FIXLOC	ADDRESS OF GYRO COMMANDS SHOULD BE IN X1
0145	REF	90	LAST 1344	22,3651	3 0046 0	CA	X1	
0146	REF	252	LAST 1470	22,3652	0 4555 0	TC	BANKCALL	
0147	REF	6	LAST 714	22,3653	17125 1	CADR	IMPULSE	
0148	REF	70	LAST 1477	22,3654	1 6030 0	TCP	DANZIG	

L. KTB OF CODES

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P0149 EACH ROUTINE TAKES A 3X3 MATRIX STORED IN DOUBLE PRECISION IN A FIXED AREA OF ERASABLE MEMORY AND REPLACES IT
 R0151 WITH THE TRANSPOSE MATRIX. TRANSP1 USES LOCATIONS XNB+0,+1 THROUGH XNB+16D, 17D AND TRANSP2 USES LOCATIONS
 R0153 XNB1+0,+1 THROUGH XNB1+16D, 17D. EACH MATRIX IS STORED BY ROWS.

0154	REP	14	LAST	1476	22,3855	02713 0	XNBEB	ECADR	XNB
0155	REP	5	LAST	282	22,3656	02554 1	XNB1EB	ECADR	XNB1
0156	REP	15	LAST	1461	E5,1713			EBANK=	XNB
0164	REP	1			22,3657	3 3855 1	TRANSP1	CAP	XNBEB
0165	REP	68	LAST	1473	22,3860	54 003 0		TS	EBANK
0166	REP	16	LAST	1481	22,3661	53*716 1		DXCH	XNB +2
0167	REP	17	LAST	1481	22,3882	53*722 0		DXCH	XNB +8
0168	REP	18	LAST	1481	22,3863	53*716 1		DXCH	XNB +2
0169	REP	19	LAST	1481	22,3884	53*720 1		DXCH	XNB +4
0170	REP	20	LAST	1481	22,3865	53*730 0		DXCH	XNB +12D
0171	REP	21	LAST	1481	22,3688	53*720 1		DXCH	XNB +4
0172	REP	22	LAST	1481	22,3687	53*728 1		DXCH	XNB +10D
0173	REP	23	LAST	1461	22,3670	53*732 1		DXCH	XNB +14D
0174	REP	24	LAST	1461	22,3871	53*728 1		DXCH	XNB +10D
0175	REP	71	LAST	1460	22,3872	1 8030 0		TCP	DANZIG
0176	REP	6	LAST	1461	E5,1554			EBANK=	XNB1
0177	REP	1			22,3673	3 3656 1	TRANSP2	CAP	XNB1EB
0178	REP	69	LAST	1461	22,3674	54 003 0		TS	EBANK
0180	REP	7	LAST	1461	22,3875	53*557 0		DXCH	XNB1 +2
0181	REP	8	LAST	1481	22,3876	53*583 1		DXCH	XNB1 +8
0182	REP	9	LAST	1461	22,3877	53*557 0		DXCH	XNB1 +2
0183	REP	10	LAST	1461	22,3700	53*561 0		DXCH	XNB1 +4
0184	REP	11	LAST	1461	22,3701	53*571 1		DXCH	XNB1 +12D
0185	REP	12	LAST	1481	22,3702	53*561 0		DXCH	XNB1 +4
0186	REP	13	LAST	1461	22,3703	53*567 0		DXCH	XNB1 +10D
0187	REP	14	LAST	1461	22,3704	53*573 0		DXCH	XNB1 +14D
0188	REP	15	LAST	1461	22,3705	53*587 0		DXCH	XNB1 +10D
0191	REP	72	LAST	1461	22,3706	1 6030 0		TCP	DANZIG

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P0192 THE SUBROUTINE SIGNMPAC SETS C(MPAC, MPAC +1) TO SIGN(MPAC).
R0193 FOR THIS, ONLY THE CONTENTS OF MPAC ARE EXAMINED. ALSO +0 YIELDS POSMAX AND -0 YIELDS NEGMAX.

R0195 ENTRY MAY BE BY EITHER OF THE FOLLOWING:

R0196 1. LIMIT THE SIZE OF MPAC ON INTERPRETIVE OVERFLOW
R0197 ENTRY' BOVB
R0198 SIGNMPAC

R0199 2. GENERATE IN MPAC THE SIGNUM FUNCTION OF MPAC
R0200 ENTRY' RTB
R0201 SIGNMPAC

R0202 IN EITHER CASE, RETURN IS TO THE NEXT INTERPRETIVE INSTRUCTION IN THE CALLING SEQUENCE.

0204			22,3707	0 0006 1	SIGNMPAC EXTEND	
0205	REP 2	LAST 353	22,3710	3 4672 0	DCA	DPOS MAX
0206	REP 769	LAST 1479	22,3711	52 155 1	DXCH	MPAC
0207	REP 439	LAST 1479	22,3712	10 000 0	CCS	A
0208	REP 297	LAST 1477	22,3713	3 4714 1	DPMODE	CAP ZERO
0209	REP 4	LAST 1477	22,3714	1 6028 1	TCF	SLOAD2 +2
0210			22,3715	1 3716 0	TCF	+1
0211			22,3716	0 0006 1	EXTEND	
0212	REP 3	LAST 1482	22,3717	4 4672 1	DCS	DPOS MAX
0213	REP 5	LAST 1482	22,3720	1 6024 0	TCF	SLOAD2

R0214 RTB OF CODE NORMUNIT IS LIKE INTERPRETIVE INSTRUCTION UNIT, EXCEPT THAT IT CAN BE DEPENDENT ON NOT TO BLOW
R0216 UP WHEN THE VECTOR BEING UNITIZED IS VERY SMALL -- IT WILL BLOW UP WHEN ALL COMPONENTS ARE ZERO. IF NORMUNIT
R0216 IS USED AND THE UPPER ORDER HALVES OF ALL COMPONENTS ARE ZERO, THE MAGNITUDE RETURNED IN 38D WILL BE TOO LARGE
R0220 BY A FACTOR OF 2(13) AND THE SQUARED MAGNITUDE RETURNED AT 34D WILL BE TOO BIG BY A FACTOR OF 2(26).

0222	REP 164	LAST 1479	22,3721	3 4712 1	NORMUNIT1 CAP	ONE
02221	REP 1		22,3722	1 3724 1	TCF	NORMUNIT +1
02222	REP 298	LAST 1482	22,3723	3 4714 1	NORMUNIT CAP	ZERO
02223	REP 42	LAST 1460	22,3724	6 0120 1	AD	FIXLOC
02224	REP 770	LAST 1462	22,3725	54 156 1	TS	MPAC +2
02225	REP 253	LAST 1460	22,3726	0 4555 0	TC	BANKCALL
0223	REP 3	LAST 1145	22,3727	01010 1	CADR	VEGAGREE
0224	REP 771	LAST 1482	22,3730	10 154 0	CCS	MPAC
0225	REP 1		22,3731	1 3765 1	TCF	NOSHIPT
0226			22,3732	1 3734 0	TCF	+2
0227	REP 2	LAST 1482	22,3733	1 3765 1	TCF	NOSHIPT
0228	REP 772	LAST 1462	22,3734	10 157 0	CCS	MPAC +3
0229	REP 3	LAST 1462	22,3735	1 3765 1	TCF	NOSHIPT
0230			22,3736	1 3740 0	TCF	+2
0231	REP 4	LAST 1482	22,3737	1 3765 1	TCF	NOSHIPT
0232	REP 773	LAST 1482	22,3740	10 161 0	CCS	MPAC +5
0233	REP 5	LAST 1482	22,3741	1 3765 1	TCF	NOSHIPT
0234			22,3742	1 3744 1	TCF	+2
0235	REP 6	LAST 1482	22,3743	1 3765 1	TCF	NOSHIPT

GET SIGN AGREEMENT IN ALL COMPONENTS



L RTB OP CODES

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0236	REP 774	LAST 1482	22,3744	3 0155 0	CA	MPAC +1
0237			22,3745	0 0006 1	EXTEND	
0238	REP 85	LAST 1449	22,3746	7 4675 0	MP	BIT14
0239	REP 775	LAST 1483	22,3747	20 155 1	DAS	MPAC
0240	REP 776	LAST 1483	22,3750	3 0180 0	CA	MPAC +4
0241			22,3751	0 0006 1	EXTEND	
02411	REP 86	LAST 1483	22,3752	7 4675 0	MP	BIT14
02412	REP 777	LAST 1483	22,3753	20 180 1	DAS	MPAC +3
02413	REP 778	LAST 1483	22,3754	3 0182 1	CA	MPAC +6
02414			22,3755	0 0006 1	EXTEND	
02415	REP 87	LAST 1483	22,3756	7 4675 0	MP	BIT14
02416	REP 779	LAST 1483	22,3757	20 182 0	DAS	MPAC +5
02417	REP 5	LAST 1145	22,3760	3 4720 0	CAF	THIRTEEN
02418	REP 780	LAST 1483	22,3761	50 156 0	INDEX	MPAC +2
02419			22,3762	54 045 1	TS	37D
0242	REP 87	LAST 1488	22,3763	0 4574 0	OPPTUNIT	TC POSTJUMP
0243	REP 2	LAST 1088	22,3764	01024 0	CADR	UNIT +1
02431	REP 299	LAST 1482	22,3765	3 4714 1	NOSHIPT	CAF ZERO
02432	REP 1		22,3766	1 3761 0	TCF	OPPTUNIT -2
R0300	RTB VECSONAG	...	FORCES SIGN AGREEMENT OF VECTOR IN MPAC.			

SHIFT ALL COMPONENTS LEFT 13

DAS GAINS A LITTLE ACCURACY

SKIP THE ATC VECAGREE, DONE AT UNIT

0301	REP 254	LAST 1482	22,3767	0 4555 0	VECSONAG	TC	BANKCALL
0302	REP 4	LAST 1482	22,3770	01010 1	CADR		VECAGREE
0303	REP 73	LAST 1481	22,3771	0 6030 1	TC		DANZIG

*** END OF SATRAP .007 ***



SYMBOL TABLE LISTING, INCLUDING DEFINITION, HEALTH, PAGE OF DEF, J OF REFS, PAGE OF FIRST REP, PAGE OF LAST REP.

SYMBOL	DEF	H	REFERENCES	SYMBOL	DEF	H	REFERENCES	SYMBOL	DEF	H	REFERENCES
.05G	26,3237	834	1 804	-OCT10	6171	1083	1 1083	=14MS	17,3340	1024	7 1010 1024
.05GBIT	4710	= 57		-ON	40,2334	315	2 314 353				
.05GSW	0146	= 57	4 804 823	-PHASE1	0752	73	6 181 1380	A	0000	= 37	439 80 1462
.166...	23,3430	1331	1 1327	-PHASE2	0754	73	3 181 197	A-POK	13,3138	1290	4 1267 1300
.30	11,3674	1321	1 1292	-PHASE3	0756	73	3 181 528	ABCLoad	41,2812	337	1 321
.5SEC	4731	1171	9 127 1414	-PHASE4	0760	73	3 181 652	ABLOAD	41,2877	338	1 321
.6SECTS	24,2774	655		-PHASE5	0762	73	4 181 779	ABORT	5804	= 1464	
				-PHASE8	0764	73	4 181 1474	ABORT2	5824	1463	1 1463
+DECSGN	40,2204	313	1 313	-ROLL1	4377	= 960	1 958	ABS	00,3226	1151	2 1150
+DOWN	00,2610	1138	1 1137	-ROLL2	16,3740	960	1 958	ABVAL	00,3201	1150	
+LIMIT	42,3252	334	1 334	-SLOPE	16,3730	960	3 953 955	ABVALABS	00,3176	1150	1 1066
+MOA	E7,1625	= 120	9 120 629	-T-3	15,3785	1062	1 1057	ACADN63	24,2402	646	1 647
+ON	40,2314	314	3 314 353	-TORQUE	18,3673	958	1 957	ACADN65	24,2408	646	2 642 644
+ROLL1	4715	= 960	1 958	-TPER	E4,1745	= 69	7 89 514	ACBD2Y	17,3435	1027	1 1027
+ROLL2	4732	= 960	1 958	-UP	00,2820	1138	1 1137	ACBD2Z	17,3500	1026	1 1027
+TORQUE	16,3652	957	1 957	-VM/360K	15,3772	1062	2 1054 1082	ACCEPTUP	07,3828	1417	2 1418
+2ACTDEG	20,2145	687	2 888	-VMT/160	15,3772	= 1082	1 1054	ACCEPTWD	41,2027	316	2 318
				-VREL	E7,1525	= 116	3 118 836	ACCOMP	11,2430	1305	1 1313
NBSM	23,3601	1337	1 497	-VT/180	E6,1813	= 110	13 110 1055	ACORD	E5,1522	= 97	2 433
SNMB	23,3577	1337	5 281 687	-VT/180E	E6,1570	= 111	1 1053	ACORD	E6,1830	= 107	5 107 1028
				-1/KR2	28,3211	834	1 820	ACOS=0	00,3636	1159	4 1159 1181
-AYO	E3,1713	= 84	2 618 1220	-1/12	13,3757	1322	1 1311	ACOSABRT	00,3722	1181	
-BIT10	06,2763	155	1 151	-1/2+2	00,2444	1134	1 1155	ACOSOP	00,3720	1161	1 1159
-BIT14	7705	1173	2 686 904	-1/8	7710	1173	1 1089	ACOSHR	00,3713	1161	1 1159
-CCSPR	01,3153	1188	1 1189	-1CK	43,3271	1365	5 1368 1371	ACOSST	00,3624	1159	1 1159
-CDUT+1	20,3710	1040	1 1039	-15DEGS	08,2506	144	1 143	ACOSST2	00,3641	1159	2 1159
-CONMAX	07,3544	1410	2 1392 1393	-2SEC	10,3677	1462	1 1446	ACOSZERO	00,3726	1161	1 1159
-CONMAX-	07,3545	1410	2 1392 1393	-4ACTDEG	20,2144	687	1 666	ACOS3	00,3651	1160	1 1181
-COSB	E5,1673	= 93	1 93	-50SC	04,3515	1259	1 1247	ACRDZ	17,3055	1015	2 1015
-DELAIG	E6,1878	= 109	5 109 1042	-6.05DEG	26,3011	764	1 763	ACRJETS	17,3174	1019	2 1014 1027
-DELANG	E6,1877	= 109	4 109 1042	-70DEGS	08,2505	144	1 143	ACROLL	17,3005	1014	
-DELAOG	E6,1875	= 109	3 109 1042					ACTCENT	E5,1632	= 91	3 91 487
-ELR	05,3166	169	2 185 186	/BUP+	00,2721	1142	2 1141	ACTIVE	22,3378	490	2 484 490
-ENDERAS	7712	1173	1 1080	/BUP-	00,2715	1141	2 1141	ACTLIM	20,3181	937	2 926 931
-ENDVAC	6220	1084	2 1080 1098	/MPAC+	00,2767	1143	2 1143	ACTSAT	20,3413	941	2 937
-ERTHRAT	34,2277	531	1 526	/MPAC-	00,2783	1143	2 1143	ACYCHECK	17,3113	1016	
-FOURDT	17,2002	677	1 876	/NORM	00,2732	1142	1 1142	ACYJETS	17,3210	1020	2 1016 1027
-GYROMIN	07,3322	1402	2 1402 1405	/NORM2	00,2725	1142	1 1142	AC2Y	17,3453	1027	2 1027
-HSCALED	26,3313	835	1 805					ADB	E6,1655	= 108	7 108 1002
-KSCALE	26,3315	835	1 805	= .24	21,2610	988	1 985	ADRVEL	E6,1523	= 108	4 1001 1004
-KVSACLE	37,3671	842	1 836	=+1SEC	17,3335	1024	5 1021 1028	ADDINDRP	33,3261	437	1 437
-MAXADRS	4364	= 1364	1 1369	=+14MS	21,3034	990	1 987	ADDRESS	6052	1079	
-MAXDELV	37,3135	784	1 782	=-1SEC	17,3333	1024	3 1021 1024	ADDRWD	0118	67	79 1077 1336
-MULT(E)	37,3355	790	1 790	=-2	7715	= 1020	4 1015 1026	ADENDEXT	25,3024	617	1 615
-MULT(M)	37,3357	790		=-4	6061	= 1020	2 1015 1016	ADERCOMP	33,3346	439	

HEALTH KEY: NORMALLY DEFINED UNLESS FLAGGED AS FOLLOWS:

UN UNDEFINED	= DEFINED BY EQUALS	J DEFINED BY JOKER OR ERASE ANYWHERE	MD MULTIPLY DEFINED
ED BADLY DEFINED	CD DEFINITION ASSOCIATED WITH CONFLICT	XX MISCELLANEOUS TROUBLE	